MONTHLY WEATHER REVIEW.

Editor: Prof. CLEVELAND ABBE.

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INTRODUCTION.

The REVIEW for August, 1896, is based on 2,746 reports from stations occupied by regular and voluntary observers, classified as follows: 149 from Weather Bureau stations; 33 from U. S. Army post surgeons; 2,421 from voluntary observers; 33 from Canadian stations; 1 from Hawaii; 96 received through the Southern Pacific Railway Company; 14 from U. S. Life-Saving stations. International simultaneous observations are received from a few stations and used together with trustworthy newspaper extracts and special reports.

The WEATHER REVIEW is prepared under the general editorial supervision of Prof. Cleveland Abbe. Unless otherwise specifically noted, the text is written by the Editor, but the statistical tables are furnished by Mr. A. J. Henry, Chief of the Division of Records and Meteorological Data. Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada, Mr. Curtis J. Lyons, Meteorologist to the Government Survey, Honolulu, and of Dr. Mariano Bárcena, Director of the Central Meteorological Observatory of Mexico.

CLIMATOLOGY OF THE MONTH.

GENERAL CHARACTERISTICS.

The pressure has been rather high on both the Atlantic and Pacific coasts. The mean temperature was much above normal in the Gulf States and the interior valley; the highest mean temperatures and the highest maximum temperatures on record for August were reported from many stations in those regions and from some stations in New England and on the Pacific Coast. The lowest minimum temperatures for August were also reported at a few stations. The rainfall was below the normal in the Atlantic and Gulf States, many stations reporting the least on record for August; it was above normal in the Pacific Coast States, where most stations reported the largest rainfalls on record for August.

ATMOSPHERIC PRESSURE.

[In inches and hundredths.]

The distribution of mean atmospheric pressure reduced to sea level, as shown by mercurial barometers, not reduced to standard gravity, and as determined from observations taken daily at 8 a. m. and 8 p. m. (seventy-fifth meridian time), is shown by isobars on Chart IV. That portion of the reduction to standard gravity that depends on latitude is shown by the numbers printed on the right-hand border.

The *mean pressures* during the current month were highest in the South Atlantic States. They were lowest in Arizona. The highest were: Charleston, 30.11; Lynchburg, Savannah, Jupiter, Tampa, and Mobile, 30.09; Parkersburg, Wilmington, Atlanta, Jacksonville, Key West, New Orleans, and Galveston, 30.08. The lowest were: Prince Albert, 29.81; Yuma, 29.83; Phœnix, 29.87; Port Arthur and Miles City, 29.88; Winnipeg and Fresno, 29.89.

As compared with the normal for August, the mean pressure was in excess at all stations except a small portion of the upper Lake Region. The greatest excesses were: Helena, 0.11; Edmonston, 0.10; Charleston and Galveston, 0.09; Halifax, Tampa, Mobile, New Orleans, and San Diego, 0.08. The greatest deficits were: Marquette, 0.06; Port Arthur, 0.05; Sault Ste. Marie, 0.04; Duluth, 0.03.

As compared with the preceding month of July, the pressures, reduced to sea level, show a rise in California and the Plateau Region, the lower Lakes, Middle States, and New England; pressures fell in the upper Lake Region and the South Atlantic States. The greatest rises were: Chatham and Charlottetown, 0.08; Sacramento and Red Bluff, 0.07; Sydney, Father Point, Eastport, Point Reyes Light, and Fresno, 0.06. The greatest falls were: Bermuda, 0.15; Jacksonville, 0.07; Hatteras, Wilmington, Jupiter, Tampa, 0.06; Kittyhawk, Charleston, Savannah, Atlanta, Montgomery, and Winnipeg, 0.05.

AREAS OF HIGH AND LOW PRESSURE.

By Prof. H. A. HAZEN.

During the month there were six areas of high pressure and ten of low pressure sufficiently well defined to be charted, and their trajectories will be found on Charts II and I. In addition there is given the position of each area twice each day, at 8 a. m. and 8 p. m., and the observed pressure nearest to the center. It should be noted that in the region of over 1,000 feet elevation in Canada the locations of all centers and the pressures are not homogeneous with respect to those in the United States, for the reason that in Canada the observed a. m. and p. m. temperatures are used in reducing the pressure to sea level, and this introduces an abnormal diurnal variation in the reduced pressure. For example, at Calgary (3,400 feet), a difference of 30° between a. m. and p. m. will introduce a variation of 0.19 inch in the reduction. On several days during the present month there seemed to be high areas in this region in the morning, which, however, entirely disappeared in the afternoon. Three of the high areas seemed to originate in the region of permanent high pressure, at this season off the north Pacific Coast. No. I originated in South

Dakota, and III and IV seem to have come down from the north of Montana. These highs, with the exception of I and VI, moved to the Gulf of St. Lawrence, and were absorbed there by a rather permanent high pressure area.

The storms, with the exception of I, III, and VI, originated or were first noted to the north of Montana, and almost all the tracks were to the north of the region of observation.

During the month the pressure was permanently high over the Gulf of Mexico; the lows were fairly well marked and generally without precipitation, while the areas of high pressure were of very slight magnitude.

The accompanying table gives the principal characteristics as regards the origin and disappearance of each high and low; also the velocity and duration:

Movements of centers of areas of high and low pressure.

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
High areas.		°	°		°	°	*Miles.*	*Days.*	*Miles.*	*Miles.*
I	1, a. m.	44	100	5, p. m.	32	76	1,790	4.5	398	16.6
II	8, p. m.	48	128	16, a. m.	44	58	3,560	7.5	474	19.8
III	14, a. m.	53	116	24, a. m.	47	55	4,090	10.0	409	17.0
IV	21, a. m.	53	120	27, p. m.	46	60	4,570	6.5	705	29.4
V	24, a. m.	46	123	31, a. m.	48	55	5,140	7.0	734	30.6
VI	28, a. m.	49	126	31, p. m.	42	95	1,800	3.5	514	21.4
Sums							20,950	39.0	3,234	
Mean of 6 paths									539	22.5
Mean of 39 days									537	22.4
Low areas.										
I	1, a. m.	42	89	3, a. m.	48	60	1,630	2.0	815	34.0
II	1, a. m.	53	109	4, a. m.	49	76	2,080	3.0	693	28.9
III	3, p. m.	39	104	8, a. m.	50	64	2,430	4.5	537	22.4
IV	6, p. m.	49	106	10, a. m.	48	64	2,440	3.5	698	29.1
V	8, a. m.	51	112	12, p. m.	45	70	3,360	4.5	725	30.2
VI	15, a. m.	50	97	17, p. m.	49	60	1,430	2.5	574	23.9
VII	19, p. m.	49	111	25, a. m.	46	59	3,670	5.5	667	27.8
VIII	23, p. m.	50	115	27, a. m.	48	72	2,310	3.5	660	27.5
IX	26, a. m.	51	120	28, p. m.	45	101	1,120	2.5	446	18.6
X	28, p. m.	52	113	31, a. m.	51	67	2,000	2.5	802	33.4
Sums							22,360	34.0	6,617	
Mean of 10 paths									662	27.6
Mean of 34 days									658	27.4

LOCAL STORMS.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

1st.—*Ohio:* A series (four in number) of the most violent thunderstorms in the history of the local station visited Cincinnati and neighboring towns on the afternoon of this date. Hail, high winds, and heavy rain accompanied these storms. The second storm was almost tornadic in character. Damage to houses, trees and telegraph wires was great and widespread in the city and suburbs. *Iowa:* A severe thunderstorm passed over Keokuk during the night of July 31 and August 1. The wind reached an extreme velocity for one minute of 60 miles. Trees were broken, chimneys demolished, and several buildings injured. At the Fair Grounds, one and a half miles west, considerable damage was done to the buildings. All debris was carried from the northwest to the southeast.

1st–2d.—*Tennessee:* A severe storm occurred a few miles west of Nashville, where the high wind blew down fences, outbuildings and trees. It was accompanied by a heavy fall of rain, badly damaging crops; the path of the storm was marked by great destruction.

2d.—*North Dakota:* A destructive tornado visited Walsh County about midnight of this date. Several houses, barns, and granaries were leveled to the ground. One child was killed and several persons were severely injured.

3d.—*Wyoming:* A wind storm with a maximum velocity of 40 miles per hour, accompanied by light rain, occurred at Lander. Telegraph lines were badly damaged.

3d–4th.—*Minnesota:* A thunderstorm with very high wind occurred at Minneapolis during the night. A velocity of 90 miles per hour for a single minute was registered at 12.07 a. m. of the 4th. A few frail outhouses were unroofed, some trees blown down and basements flooded.

4th.—*Vermont:* It is reported that the most severe hailstorm in 43 years struck the town of Bradford, Merrimack County, at 2.30 in the afternoon, and in twenty minutes did a great deal of damage to buildings, trees, and fields of grain and corn. *Indiana:* The southern part of Wells County in the vicinity of Nottingham and Montpelier was visited by a hailstorm at 5 p. m. Much damage was done to oil derricks and buildings.

5th.—*Vermont:* A severe wind and rain storm passed over the city of Rutland, Rutland County, causing a great deal of damage along its track to shade trees, chimneys, and roofs of houses. *Illinois:* A thunderstorm with heavy rain occurred at Belvidere, Boone County. Six inches of rain fell in four hours, damaging crops and flooding bottom lands. The damage done to buildings by lightning will probably amount to many thousands of dollars. *Michigan:* A heavy rainstorm did considerable damage throughout Genesee County in the vicinity of Flint. Lightning damaged barns; crops were more or less injured. *Indiana:* A storm swept over Wells County. The greatest destruction was at Liberty Center. A church was partly wrecked; other buildings were damaged, trees and fruit destroyed, and fields of corn leveled.

5th–6th.—*North Dakota:* Hail in the northeastern part of Logan County destroyed over 1,000 acres of standing grain.

6th.—*New York:* Warrensburg was visited by a heavy rainstorm, accompanied by a gale and destructive lightning. Several persons were shocked by the electric wires of a hotel. The storm was the most violent ever known in that section. A heavy rainstorm accompanied by severe winds and some hail swept over the vicinity of Springville, Erie Co., and did considerable damage. Two persons were injured. *Ohio:* A heavy rainstorm visited Springfield, Clark Co. The violence of the storm caused the suspension of all business for over an hour. A large number of trees, chimneys, and signs were blown down. A severe thunderstorm was reported from Hamilton, Butler Co. Lightning did much damage, and crops suffered severely from the heavy rainfall. In Wayne, Summit, Stark, Cuyahoga, and Ashtabula counties, thunderstorms were reported. *Michigan:* A severe storm passed over the southern part of Branch County. One person was killed by a falling tree.

6th–7th.—*Indiana:* Richmond, Wayne Co., was visited by a storm of lightning, thunder, and rain. The rainfall was excessive, amounting almost to a cloudburst. The damage resulting is estimated at between $75,000 and $100,000. In the counties of Shelby, Union, and Randolph much damage was done to property and crops by lightning and floods.

8th.—*Michigan:* An unusually severe storm traveling from the west, struck Detroit at 8.30 a. m. It was characterized by high wind, intense and incessant lightning, and heavy thunder. Little damage was done in the city.

9th.—*Arkansas:* Following is a newspaper account of a storm which visited Berea, Ashley Co., on this date:

> Storm indications were not very threatening at the time, and the wind was blowing with apparently little force, when, suddenly, without a moment's warning, an electric cloudburst or whirlwind wrenched the building from its foundation, leveled it to the ground, and disappeared without doing any other damage in the community except twisting the top from a large tree standing near the church, and destroying a few panels in an adjoining fence. One person, the minister, was killed, and several others injured.

Wisconsin: A thunderstorm passed over Milwaukee at 11.50 p. m. The force of the wind for a period of ten minutes was

sufficient to break windows, blow down signs and awnings, and to damage frail structures.

9th–10th.—*Michigan:* The 9th and 10th were periods of very great thunderstorm activity. One person was killed by lightning, and two were drowned by the capsizing of a boat during a squall at Detroit about 7.30 p. m. of the 9th. The greatest destruction by wind appears to have been at Saginaw, where the loss to structures was probably over $30,000. A large number of barns throughout the State were struck by lightning and consumed.

10th.—Portions of *Indiana* and *Ohio* were visited by severe thunderstorms. In Rockcreek township, Wells County, Ind., a funnel cloud was seen moving to the southeast. Trees and small buildings were blown down over a path about 660 feet wide. *South Dakota:* Brown County, a storm of wind, rain, and hail moved southeast over a path 3½ to 4 miles wide. It is said there was a funnel cloud high in the air.

11th.—Thunderstorms occurred in *Michigan*, western *Missouri*, and northern *Ohio;* also on the night of the 11–12th in northwestern *Indiana*.

13th.—*Minnesota:* Corn and live stock were damaged by hail south of Marshall, Lyon Co. *Iowa:* There was some damage to orchards and corn in Dallas and Hamilton counties. *Pennsylvania:* Heavy rains in western Pennsylvania caused creeks and smaller streams to rise very rapidly. At Dehaven four persons were drowned in the flood waters.

15th.—Thunderstorms were general throughout *Iowa*, and portions of *Illinois*, *Nebraska*, and *Minnesota*.

16th.—*California:* Heavy rains fell in the southern part of the State; railroad property and bridges damaged. *Missouri:* Severe thunderstorms occurred in the vicinity of St. Louis.

18th.—*Massachusetts:* A small whirlwind struck a big wooden freight shed which was being constructed by the railroad company in Boston and caused it to collapse, burying 35 men among the timbers. One man was killed and nine badly injured.

20th.—*South Dakota:* Violent wind and hail storm occurred near Chamberlain and Kimball, in Brule County. It extended from northwest to southeast leveling all the vegetation in its path in a strip about 2 miles wide; lasted about 20 minutes. Property loss to buildings $4,000 or $5,000. White River Valley also suffered from a hail and wind storm, which destroyed the crops.

22d.—*Missouri:* On the 22d severe local storms occurred in many of the northern and a few of the southern counties, doing a great deal of damage to corn, orchards, and hay and grain stacks. The severest storms reported in Daviess, Linn, Pulaski, and Knox counties, where considerable damage was done to buildings. Severe local storms and torrential rains also occurred in *Illinois*, *Iowa*, and *Indiana* on the same date.

23d.—*Tennessee:* Newport and Fayetteville, Tenn., were visited by severe thunderstorms on the afternoon of this date.

27th.—*Texas:* Galveston was visited by a high wind from the northeast on the evening of this date. Property loss $5,000.

Total casualties by wind, 16; casualties by lightning, 80.

TEMPERATURE OF THE AIR.

[In degrees Fahrenheit.]

The mean temperature is given for each station in Table II, for voluntary observers. Both the mean temperatures and the departures from the normal are given in Table I for the regular stations of the Weather Bureau.

The *monthly mean temperatures* published in Table I, for the regular stations of the Weather Bureau, are the simple means of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The *regular diurnal period* in temperature is shown by the hourly means given in Table V for 29 stations selected out of 82 that maintain continuous thermograph records.

The *distribution of the observed monthly mean* temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart IV; the lines are drawn over the Rocky Mountain Plateau Region, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The *highest mean temperatures* were: Yuma, 90.0; Phœnix, 88.6; San Antonio, 84.8; Palestine, 84.3; Abilene, Galveston, Key West, 84.0; Oklahoma, 83.2; New Orleans, 83.0. The lowest mean temperatures were: Point Reyes Light, 56.0; Tatoosh Island, 57.4; Port Angeles, 58.2; San Francisco, 59.5; Eastport, 59.6; Eureka, 59.9. Among the Canadian stations the highest were: Kingston, 68.4; Toronto, 66.3; Montreal, 66.1. The lowest were: Banff, 54.0; Father Point, 55.2; Edmonton, 56.4; White River, 56.8.

As compared with the normal for August the mean temperature for the current month was in excess throughout the United States east of the Rocky Mountains and in Washington and Oregon; it was deficient in California, the Central Plateau, and northern Slope, and Canada. The greatest excesses were: Fort Smith, 5.9; Topeka, 4.4; Meridian, 4.2; Dodge City, 4.1; Eureka, 4.0; Atlanta and Chattanooga, 3.9; Memphis, Oklahoma, and Wichita, 3.8; Mobile, Knoxville, Green Bay, and Milwaukee, 3.5.

Considered by districts the mean temperatures for the current month show departures from the normal as given in Table I. The greatest positive departures were: West Gulf, 2.7; middle Slope, 3.1; southern Slope (Abilene), 3.3. The greatest negative departure was: Middle Plateau, 1.2.

The *years of highest and lowest mean temperatures* for August are shown in Table I of the REVIEW for August, 1894. The mean temperature for the current month was the highest on record at: Fort Smith, 84.6; Palestine, 84.3; Abilene, 84.0; Oklahoma, 83.2; Pensacola, 82.7; Jupiter, 82.2; Wichita, 81.6; Columbia, 81.2; Chattanooga and Atlanta, 80.4; Hatteras and Dodge City, 79.4; Cape Henry, 78.8; Raleigh, 78.7; Milwaukee, 71.6; Green Bay, 69.9; Eureka, 59.9; Tatoosh Island, 57.4; Point Reyes Light, 56.0. The mean temperature for the current month was not the lowest on record at any regular station of the Weather Bureau.

The *maximum and minimum temperatures* of the current month are given in Table I. The highest maxima were: 113, Yuma (13th); 108, Phœnix (13th); 107, Fort Smith, (3d); 106, Shreveport (6th), Wichita, (20th). The lowest maxima were: 69, Point Reyes Light (29th); 72, Tatoosh Island (23d), Eureka (31st), and San Francisco (18th); 77, Port Angeles (23d); 78, Eastport (11th). The highest minima were: 71, Yuma (6th), Key West (31st), and Jupiter (frequently); 70, Corpus Christi (30th), Galveston (27th), New Orleans (9th), and Pensacola (1st). The lowest minima were: 34, Moorhead (31st); 37, Northfield (29th); 38, Havre (11th) and Williston (26th).

The *years of highest maximum and lowest minimum temperatures* are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at: Fort Smith, 107; Wichita and Shreveport, 106; Topeka and Little Rock, 105; Oklahoma, 104; Kansas City and Concordia, 103; Palestine and Pueblo, 102; Columbia, 101; St. Paul, Vicksburg, and Meridian, 100; Minneapolis and Raleigh, 99; Milwaukee and Baltimore, 98; Parkersburg and Pensacola, 97; Albany and Jupiter, 95; New Haven, 94; Alpena, 93; Vineyard Haven, 92; Woods Hole, 87; Block Island and Nantucket, 86. The

minimum temperatures were the lowest on record at: Denver, 43; Vineyard Haven and Amarillo, 52; Augusta, 58; Savannah, 61; Jacksonville, 64; Tampa, 66.

The greatest daily range of temperature and data for computing the extreme and mean monthly ranges are given for each of the regular Weather Bureau stations in Table I. The largest values of the greatest daily ranges were: Williston, Miles City, and Idaho Falls, 48; Bismarck and Huron, 47; Moorhead and Carson City, 46; Rapid City, 45. The smallest values were: Hatteras, 14; Block Island, Woods Hole, Jupiter, Point Reyes Light, and Eureka, 17; Nantucket, Key West, Port Eads, Corpus Christi, and San Francisco, 18.

Among the *extreme monthly ranges* the largest were: Huron, 61; Moorhead, 60; Bismarck, 58; Pierre and Sioux City, 57; Williston and La Crosse, 56. The smallest values were: Key West, 19; Point Reyes Light and San Francisco, 20; Eureka, 21; Corpus Christi and Jupiter, 22; Port Eads, 23; Hatteras, Galveston, and Tatoosh Island, 24.

The *accumulated monthly departures* from normal temperatures from January 1 to the end of the current month are given in the second column of the following table, and the average accumulated departures are given in the third column for comparison with the departures of current conditions of vegetation from the normal condition.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
	°	°		°	°
New England	+ 0.5	+ 0.1	Florida Peninsula	−11.4	− 1.4
Middle Atlantic	+ 4.8	+ 0.6			
South Atlantic	+10.2	+ 1.3			
East Gulf	+ 1.7	+ 0.2			
West Gulf	+11.3	+ 1.4			
Ohio Valley and Tenn.	+11.2	+ 1.4			
Lower Lake	+11.3	+ 1.4			
Upper Lake	+23.1	+ 2.9			
North Dakota	+ 7.4	+ 0.9			
Upper Mississippi	+21.9	+ 2.7			
Missouri Valley	+21.4	+ 2.7			
Northern Slope	+ 9.4	+ 1.2			
Middle Slope	+25.0	+ 3.1			
Abilene (southern Slope)	+24.7	+ 3.1			
Southern Plateau	+ 5.5	+ 0.7			
Middle Plateau	+ 1.8	+ 0.2			
Northern Plateau	+15.9	+ 2.0			
North Pacific	+ 2.6	+ 0.3			
Middle Pacific	+ 1.6	+ 0.2			
South Pacific	+ 5.0	+ 0.6			

MOISTURE.

The *quantity of moisture* in the atmosphere at any time may be expressed by the weight of the vapor coexisting with the air contained in a cubic foot of space, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-points for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, are given in Table I.

The *rate of evaporation* from a special surface of water on muslin at any moment determines the temperature of the wet-bulb thermometer, but a properly constructed evaporometer may be made to give the *quantity* of water evaporated from a similar surface during any interval of time. Such an evaporometer, therefore, would sum up or integrate the effects of those influences that determine the temperature as given by the wet bulb; from this quantity the *average humidity of the air* during any given interval of time may be deduced.

Measurements of evaporation within the thermometer shelters are difficult to make so as to be intercomparable at temperatures above and below freezing, and may be replaced by computations based on the wet-bulb temperatures. The absolute amount of evaporation from natural surfaces not protected from wind, rain, sunshine, and radiation, are being made at a few experimental stations and will be discussed in special contributions.

Sensible temperatures.—The sensation of temperature experienced by the human body and ordinarily attributed to the condition of the atmosphere depends not merely on the temperature of the air, but also on its dryness, on the velocity of the wind, and on the suddenness of atmospheric changes, all combined with the physiological condition of the observer. A complete expression for the relation between atmospheric conditions and nervous sensations has not yet been obtained.

PRECIPITATION.

[In inches and hundredths.]

The *distribution of precipitation* for the current month, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III. The total precipitation for the current month was heaviest, 6 to 11 inches, in the northern portion of the Florida Peninsula, and nearly as heavy in a portion of western Indiana and northeastern Kansas. It was less than 0.5 in central Montana, central Idaho, central Washington and Oregon, and nearly all of California and Nevada.

Details as to *excessive precipitation* are given in Tables XII and XIII.

The *diurnal variation*, as shown by tables of hourly means of the total precipitation, deduced from self-registering gauges kept at the regular stations of the Weather Bureau, is not now tabulated.

The *current departures* from the normal precipitation are given in Table I, which shows that precipitation was in excess in the lower Lake Region and St. Lawrence Valley, the Plateau Region and Pacific Coast, portions of Iowa and adjacent States. Elsewhere it was deficient, and especially in the Atlantic and Gulf States. The large excesses were: Alpena, 3.3; Montreal, 3.2; Meridian, 2.6; Port Huron, 2.2. The large deficits were: Galveston, 5.2; Wilmington, 5.0; Hatteras, 4.9; Chattanooga, 4.3; Kittyhawk, 4.2; Norfolk, 4.1.

The total accumulated monthly departures from normal precipitation from January 1 to the end of the current month are given in the second column of the following table; the third column gives the ratio of the current accumulated precipitation to its normal value.

Districts.	Accumulated departures.	Accumulated precipitation.	Districts.	Accumulated departures.	Accumulated precipitation.
	Inches.	*Per ct.*		*Inches.*	*Per ct.*
Lower Lake	+ 2.50	110	New England	− 5.00	83
North Dakota	+ 1.10	107	Middle Atlantic	− 2.80	91
Upper Mississippi	+ 0.80	103	South Atlantic	− 7.30	81
Southern Plateau	+ 0.30	105	Florida Peninsula	− 0.20	99
Middle Plateau	+ 3.10	138	East Gulf	− 7.00	83
Northern Plateau	+ 0.10	101	West Gulf	− 9.70	67
North Pacific	+ 4.60	113	Ohio Valley and Tenn.	− 3.50	89
Middle Pacific	+ 2.80	115	Upper Lakes	− 2.20	90
			Missouri Valley	− 0.20	99
			Northern Slope	− 0.10	99
			Middle Slope	− 2.50	86
			Abilene (southern Slope)	− 6.20	66
			South Pacific	− 1.90	77

The *average departure* for each district is given in Table I. By dividing each by its respective normal the following corresponding percentages are obtained (precipitation is in excess when the percentage of the normal exceeds 100):

Above the normal: Lower Lake, 113; upper Lake, 114; middle Plateau, 446; northern Plateau, 433; north Pacific, 141; middle Pacific, 282.

Normal: South Pacific, 100.

Below the normal: New England, 60; middle Atlantic, 42; south Atlantic, 51; Florida Peninsula, 74; east Gulf, 64; west Gulf, 36; Ohio Valley and Tennessee, 81; North Da-

kota, 84; upper Mississippi, 94; Missouri Valley, 74; northern Slope, 77; middle Slope, 55; southern Slope (Abilene), 39; southern Plateau, 85.

The years of greatest and least precipitation for August are given in the REVIEW for August, 1890. The precipitation for the current month was the greatest on record at: Meridian, 6.39; Spokane, 1.48; Carson City, 1.30; Walla Walla, 1.24; Winnemucca and Eureka, 0.70; Red Bluff, 0.54; Sacramento, 0.20; Fresno, 0.15; San Francisco, 0.09. It was the least on record at: Wilmington, 2.48; Columbia, 2.38; Atlanta, 1.97; Chattanooga, 1.90; Harrisburg, 1.45; Fort Smith, 1.31; Knoxville, 1.25; Charlotte, 1.05; Philadelphia, 0.46; Galveston, 0.35.

HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 13; Arizona, 4, 15, 16, 17, 20, 23, 24, 25. Arkansas, 10, 22. California, 16, 30. Colorado, 5, 11, 13, 18, 19, 21 to 24, 30. Connecticut, 14, 19. Delaware, 13. Georgia, 11, 14. Idaho, 3, 20, 21. Illinois, 5, 11, 13, 15, 22, 23. Indiana, 1, 5, 6, 7, 15, 22, 23. Iowa, 4, 5, 9, 13, 14, 15, 21, 26. Kansas, 9, 21, 22, 25. Kentucky, 1, 12, 13. Louisiana, 18. Maine, 18. Massachusetts, 15, 18, 19. Michigan, 1, 4, 5, 8 to 11, 14, 15, 25, 26, 29. Minnesota, 1 to 4, 6, 7, 8, 10, 13 to 16. Missouri, 8, 9, 13, 22. Montana, 1, 6, 7, 8, 16. Nebraska, 4, 6, 10, 13 to 16, 30. Nevada, 16, 18, 19, 20, 23, 28. New Hampshire, 18, 19. New Jersey, 13, 18. New Mexico, 31. New York, 9, 12, 18. North Carolina, 3, 13. North Dakota, 2, 3, 5 to 8, 14, 19. Ohio, 1, 9, 10, 15, 22, 23. Oregon, 27. Pennsylvania, 16, 18. Rhode Island, 19. South Dakota, 7, 8, 10, 13, 19, 20. Texas, 16, 25. Utah, 16, 21, 22. Vermont, 18. Virginia, 13, 15. Washington, 27. Wisconsin, 4, 5, 9, 25.

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere as a whole is very nearly constant from year to year, but the proportion received by the surface of the earth depends upon the absorption by the atmosphere, and varies largely with the distribution of cloudiness. The sunshine is now recorded automatically at 18 regular stations of the Weather Bureau by its photographic, and at 24 by its thermal effects. At one station records are kept by both methods. The photographic record sheets show the apparent solar time, but the thermometric sheets show seventy-fifth meridian time; for convenience the results are all given in Table XI for each hour of local mean time.

Photographic and thermometric registers give the duration of that intensity of sunshine which suffices to make a record, and, therefore, they generally fail to record for a short time after sunrise and before sunset, because, even in a cloudless sky, the solar rays are then too feeble to affect the self-registers. If, therefore, such records are to be used for determining the amount of cloudiness, they must be supplemented by special observations of the sky near the sun at these times. The duration of clear sky thus specially determined constitutes the so-called twilight correction (more properly a low-sun correction), and when this has been applied, as has been done in preparing Table XI, there results a complete record of the clearness of the sky from sunrise to sunset in the neighborhood of the sun. The twilight correction is not needed when the self-registers are used for ascertaining the duration of a special intensity of sunshine, but is necessary when the duration of cloudiness is alone desired, as is usually the case.

The average cloudiness of the whole sky is determined by numerous personal observations at all stations during the daytime, and is given in the column "average cloudiness" in Table I; its complement, or percentage of clear sky, is given in the last column of Table XI.

COMPARISON OF DURATIONS AND AREAS.

The sunshine registers give the *durations* of effective sunshine whence the duration relative to possible sunshine is derived; the observer's personal estimates give the percentage of *area* of clear sky. These numbers have no necessary relation to each other, since stationary banks of clouds may obscure the sun without covering the sky, but when all clouds have a steady motion past the sun and are uniformly scattered over the sky, the percentages of duration and of area agree closely. For the sake of comparison, these percentages have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental records of percentages of durations of sunshine are almost always larger than the observers' personal estimates of percentages of area of clear sky; the average excess for August, 1896, is 8 per cent photographic and 10 per cent for thermometric records.

The details are shown in the following table, in which the stations are arranged according to the greatest possible duration of sunshine, and not according to the *observed* duration as heretofore.

Difference between instrumental and personal observations of sunshine.

Stations.	Apparatus.	Total possible duration for the whole month.	Personal estimated area of clear sky.	Instrumental record of sunshine.			
				Photographic.	Difference.	Thermometric.	Difference.
		Hrs.	%	%	%	%	%
Bismarck, N. Dak.	P.	440.0	65	75	+10	.....	.....
Helena, Mont.	P.	440.0	64	71	+ 7	.....	.....
Portland, Oreg.*	T.	437.6	54	.....	.....	43	−11
	P.	437.6	54	44	−10	.....	.....
Eastport, Me.	P.	435.6	39	52	+13	.....	.....
Minneapolis, Minn.	T.	435.6	.....	.....	.....	71	.....
Northfield, Vt.	P.	433.6	45	60	+15	.....	.....
Portland, Me.	T.	433.6	42	.....	.....	61	+19
Buffalo, N. Y.	T.	431.3	38	.....	.....	71	+33
Rochester, N. Y.	T.	431.3	57	.....	.....	62	+ 5
Boston, Mass.	T.	429.4	54	.....	.....	61	+ 7
Chicago, Ill.	T.	429.4	69	.....	.....	82	+13
Cleveland, Ohio	P.	429.4	53	64	+11	.....	.....
Des Moines, Iowa.	T.	429.4	55	.....	.....	62	+ 7
Dubuque, Iowa†	T.	.....	.....	.....	.....	.....	.....
Detroit, Mich.	T.	429.4	53	.....	.....	68	+15
Eureka, Cal.	P.	427.4	36	27	− 9	.....	.....
New York, N. Y.	T.	427.4	61	.....	.....	59	− 2
Omaha, Nebr.	P.	427.4	52	62	+10	.....	.....
Salt Lake City, Utah.	P.	427.4	54	77	+23	.....	.....
Columbus, Ohio.	T.	425.2	45	.....	.....	55	+10
Denver, Colo.	P.	425.2	56	63	+ 7	.....	.....
Philadelphia, Pa.	T.	425.2	55	.....	.....	82	+27
Baltimore, Md.	T.	423.2	60	.....	.....	64	+ 4
Cincinnati, Ohio	T.	423.2	64	.....	.....	83	+19
Kansas City, Mo.	P.	423.2	68	72	+ 4	.....	.....
St. Louis, Mo.	T.	423.2	69	.....	.....	81	+12
Washington, D. C.	P.	423.2	69	74	+ 5	.....	.....
Dodge City, Kans.	P.	422.1	70	78	+ 8	.....	.....
Louisville, Ky.	T.	422.1	73	.....	.....	85	+12
San Francisco, Cal.	T.	422.1	55	.....	.....	65	+10
Fresno, Cal.	T.	420.1	83	.....	.....	87	+ 4
Santa Fe, N. Mex.	P.	418.7	52	71	+19	.....	.....
Little Rock, Ark.	T.	417.1	63	.....	.....	84	+21
Wilmington, N. C.	T.	415.8	57	.....	.....	69	+12
Atlanta, Ga†	T.	.....	.....	.....	.....	.....	.....
Phœnix, Ariz.	P.	414.0	60	85	+25	.....	.....
San Diego, Cal.	P.	414.0	82	71	−11	.....	.....
Savannah, Ga.	P.	412.6	61	67	+ 6	.....	.....
Vicksburg, Miss.	T.	412.6	70	.....	.....	76	+ 6
New Orleans, La.	T.	409.7	62	.....	.....	63	+ 1
Galveston, Tex.	P.	408.0	72	80	+ 8	.....	.....

*Record by both methods. †Record incomplete.

WIND.

The *prevailing winds* for August, 1896, viz, those that were recorded most frequently, are shown in Table I for the regular Weather Bureau stations.

The *resultant winds*, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart IV, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assump-

tion that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity. These figures indicate the relative extent to which winds from different directions counterbalanced each other.

HIGH WINDS.

Maximum wind velocities of 50 miles or more per hour were reported during this month at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				*Miles*	
Cincinnati, Ohio	1	50	nw.	Omaha, Nebr	15	50	ne.
Cleveland, Ohio	10	58	w.	Port Huron, Mich	8	52	n.
Milwaukee, Wis	9	52	w.	St. Paul, Minn	4	60	nw.
New York, N. Y	9	50	nw.	Winnemucca, Nev	30	50	w.

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—The dates on which reports of thunderstorms for the whole country were most numerous were: 9th, 239; 10th, 230; 13th, 208; 14th, 235; 15th, 208; 16th, 216; 22d, 224.

Thunderstorm reports were most numerous in: Michigan, 229; Missouri, 270; North Carolina, 221; Ohio, 284.

Thunderstorms were most frequent in: Colorado, 26 days; Florida and New Mexico, 31; Louisiana, 28; Mississippi and Missouri, 25.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 18th to the 26th, inclusive. On the remaining twenty-two days of this month 216 reports were received, or an average of about 10 per day. The date on which the number of reports especially exceeded this average were: 1st, 30; 6th, 73; 9th, 25.

Auroras were reported by a large percentage of observers, as follows: North Dakota, 82; Montana, 62; Minnesota, 43; Michigan, 18.

Auroras were reported most frequently in: North Dakota, 14 days; Minnesota, Montana, and Wisconsin, 11; Michigan, 7.

CANADIAN REPORTS.

Thunderstorms were reported as follows: St. Johns, 3d; Halifax, 19th; Yarmouth, 9th, 10th, 19th; Charlottetown, 4th, 5th; Chatham and Father Point, 9th; Quebec, 4th, 7th, 16th; Montreal, 9th, 16th, 23d; Rockliffe, 6th, 29th; Toronto, 5th, 6th, 10th, 12th, 23d. Ottawa, 9th, 16th; Port Stanley, 1st, 2d, 6th, 8th to 12th, 16th, 23d, 26th; Saugeen, 5th, 8th, 18th, 23d, 30th; Parry Sound, 5th 8th, 15th, 23d, 26th, 29th, 30th; Port Arthur, 14th, 20th, 25th; Winnipeg, 2d, 21st; Minnedosa, 1st, 2d, 3d, 5th, 7th, 9th, 11th; Qu'Appelle, 8th, 10th, 19th, 20th; Medicine Hat, 2d, 9th, 12th, 13th; Swift Current, 2d, 9th, 11th, 16th, 20th; Calgary, 19th; Prince Albert, 7th, 8th, 18th, 19th.

Auroras were reported as follows: Sydney, 1st, 6th, 29th; Halifax, 1st; Yarmouth, 1st, 17th, 19th; Charlottetown, 1st, 6th, 29th; Father Point, 2d, 4th, 12th, 13th, 14th, 17th, 19th; Quebec, 1st, 2d, 4th, 7th, 9th, 17th, 20th, 24th, 29th; Montreal, 9th, 17th; Rockliffe, 7th, 8th; Toronto, 17th; Parry Sound, 6th; Port Arthur, 7th; Winnipeg, 9th, 12th, 13th, 17th, 19th, 26th, 27th; Minnedosa, 6th, 9th, 12th, 13th, 19th; Qu'Appelle, 1st; Medicine Hat, 16th, 19th; Calgary, 6th; Prince Albert, 1st, 6th, 8th, 10th, 18th, 21st, 25th.

INLAND NAVIGATION.

The *extreme and average stages of water* in the rivers for the current month are given in Table VIII, from which it appears that the Ohio, at Evansville, Ind., was 0.5 above the danger line on the 6th. The only other river that approached danger was the Wabash, at Mount Carmel, Ill., on the 1st. No special reports of damage were made in either of these cases, and, in general, the rivers maintained their usual summer stage.

CLIMATE AND CROP SERVICE.

By JAMES BERRY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective services.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 82.2°, or 3.3° above normal; the highest was 106°, at Thomasville on the 1st, and the lowest, 50°, at Newburgh on the 28th. The average precipitation was 2.30, or 1.71 below normal; the greatest monthly amount, 9.22, occurred at Daphne, and the least, 0.40, at Scottsboro. The drought which had its beginning during the second decade of July over the central and northern portions of the State has continued practically unbroken during the present month. The effect of the weather on growing crops has been very unfavorable, cutting short the prospective yield of all very materially. All large streams are very low, and the smaller creeks, in many instances, are entirely dry. There is complaint of scarcity of water for stock from the central and western portions of the State.

Arkansas.—The mean temperature was 82.6°, or 4.5° above normal; the highest was 112°, at Malvern on the 6th, and the lowest, 48°, at Camden and Keesees Ferry on the 29th. The average precipitation was 2.32, or 0.90 below normal; the greatest monthly amount, 5.75, occurred at Marvell, and the least, 0.50, at Fulton. The drought that prevailed during July was not generally broken until August 18 and 19. This prolonged dry weather, together with the abnormal heat, did great damage to cotton and corn, the former being almost a total failure on the uplands and generally a poor crop on the lowlands. Corn is a very poor crop. The rains during the latter part of the month were beneficial to minor crops and pastures and enabled farmers to begin stubble breaking, and many began sowing rye and oats for winter pasture.

California.—The mean temperature was 73.8°, or 0.1° above normal; the highest was 125°, at Volcano Springs, and the lowest, 26°, at Bodie on the 3d. The average precipitation was 0.32, or 0.29 above normal; the greatest monthly amount, 1.83, occurred at Bodie, while none fell at various places.

Colorado.—The mean temperature was 66.0°, or 1.0° above normal; the highest was 107°, at Lamar on the 9th and 10th, and the lowest, 26°, at Cameron Pass on the 23d. The average precipitation was 1.68, or about normal; the greatest monthly amount, 4.96, occurred at Thon, and the least, 0.27, at Saguache.

Florida.—The mean temperature was 82.0°, or 0.2° above normal; the highest was 100°, at McClenny on the 18th, and the lowest, 58°, at Emerson on the 30th. The average precipitation was 5.81, or 1.93 below normal; the greatest monthly amount, 14.57, occurred at Manatee, and the least, "trace," at Carrabelle. High temperatures and absence of well distributed rains during the first two decades caused a rapid deterioration of nearly all crops, but markedly so of cotton and corn, while minor crops were by no means exempt from injury

Idaho.—The mean temperature was 66.3°; the highest was 103°, at Payette on the 23d, and the lowest, 28°, at Chesterfield on the 5th. The average precipitation was 0.87; the greatest monthly amount, 2.18, oc-

curred at Murray, while no rain fell at Birch Creek and Minidoka.

Illinois.—August was a month of nearly normal temperature and slightly less than normal rainfall. The temperature departure for the State, as a whole, was +1.2°, while the rainfall departure was —0.21. The first half of the month was quite steadily warm and the last half, with slight interruption, cool. The great warm wave which extended from the 4th to the 11th carried the temperature to 100° in each section of the State, and a maximum temperature of 108° was recorded during this period at Mascoutah, St. Clair Co. A number of stations in the southern section had maximum temperatures which averaged above 90° for the month. The last half of the month was mostly cool, the 26th to the 28th being the coolest days, during which period minimum temperatures below 50° were recorded in each section of the State. Light frosts were observed on the mornings of the 27th and 28th in a few northern counties, but little or no damage resulted. The lowest temperature recorded was 37°, at Walnut, on the morning of the 26th. The range of temperatuare for the State was thus 71°, while the average greatest daily range was 33°. The rainfall of the month came in thundershowers, and neighboring stations measured amounts which vary greatly. The southern section did not receive half the normal fall, many counties were practically without rain. The greatest fall measured was 7.96 inches at Laharpe, and the least, 0.44, at Plumhill.

Iowa.—The mean temperature was 71.7°, or 0.7° above normal; the highest was 104°, at Estherville on the 7th and Madrid on the 8th, and the lowest, 34°, at Northwood on the 17th and Rock Rapids on the 27th. The average precipitation was 3.52, or about normal; the greatest monthly amount, 12.25, occurred at Centerville, and the least, 0.86, at Sioux City.

Louisiana.—The mean temperature was 83.2°, or 2.7° above normal; the highest was 1.10°, at Liberty Hill on the 1st, and the lowest, 48°, at White Sulphur Springs on the 27th. The average precipitation was 3.10, or 2.20 below normal; the greatest monthly amount, 8.99, occurred at Melville, and the least, 0.77, at Liberty Hill.

Michigan.—The mean temperature was 68.2°, or 1.6° above normal; the highest, 98°, occurred at a large number of stations in the southern part of the State on the 8th, and the lowest, 28°, at Lathrop on the 19th. The average precipitation was 4.08, or 1.84 above normal; the greatest monthly amount, 7.63, occurred at Ovid, and the least, 1.34, at Muskegon. The long continued hot spell which extended from August 4 to 12 was one of the most severe ever known. While the maximum temperatures were not by any means phenomenal, nor the high night temperatures unprecedented, the long drawn out period which they covered and the exceedingly humid condition of the atmosphere made this hot period one of the most fatal which has ever been known.

Minnesota.—The mean temperature was 67.9°; the highest was 104°, at Lesueur and Mazeppa on the 4th, and the lowest, 29°, at Breese on the 31st. The average precipitation was 2.28; the greatest monthly amount, 5.27, occurred at Maple Plain, and the least, 0.34, at New Ulm.

Mississippi.—The mean temperature was 82.6°, or 2.6° above normal; the highest was 107°, at Water Valley on the 1st and Yazoo City on the 2d, and the lowest, 47°, at French Camp on the 28th. The average precipitation was 2.75, or 1.21 below normal; the greatest monthly amount, 9.29, occurred at Bay St. Louis, and the least, 0.02, at Palo Alto. Agricultural interests have been unfavorably affected as to growth and yield by the deficiency of moisture in the central and northern portions of the State, and some damage was sustained in the southern counties by heavy rains and wind which beat out and stained the cotton. The dry weather has been favorable, however, to cotton picking, the gathering of corn, pulling of fodder, and saving of hay. Water stages have been low in all streams, and live stock has suffered seriously in some sections remote from the larger water courses.

Missouri.—The mean temperature was 76.3°, or 1.5° above normal; the highest was 108°, at Grovedale on the 6th, and the lowest, 41°, at the same place on the 28th. The average precipitation was 3.32, or 0.17 above normal; the greatest monthly amount, 8.45, occurred at Irena, and the least, 0.38, at Zeitonia. In the extreme northern counties there was sufficient moisture for all purposes throughout the month, some localities, in fact, received much more than was needed, but over the greater portion of the central and southern sections droughty conditions prevailed until the 15th and in some localities during the entire month. In those sections corn and other growing crops were already suffering from drought, to a greater or less extent, at the opening of the month, and the continued dry weather resulted in serious injury in many counties. In a few of the southern counties late corn was almost ruined except for fodder. Apples and late peaches were also seriously injured by the sun and hot, dry winds.

Montana.—The mean temperature was 64.0°, or 4.0° below normal; the highest was, 103°, at Musselshell on the 1st, and the lowest, 28°, at Kipp on the 11th. The average precipitation was 0.93, or 0.15 above normal; the greatest monthly amount, 2.28, occurred at Columbia Falls, and the least, 0.03, at St. Paul's Mission. Thunderstorms were quite frequent and violent, resulting in loss of life and destruction of property.

Nebraska.—The mean temperature was 73.3°, or 0.6° above normal; the highest was 107°, at Madrid on the 3d, and the lowest, 34°, at Kennedy on the 17th. The average precipitation was 1.81, or 0.81 below normal; the greatest monthly amount, 8.43, occurred at Beatrice; no rain fell at Dunning.

Nevada.—The mean temperature was 69.0°, or 2.5° below normal; the highest was 109°, at St. Thomas on the 12th, and the lowest, 34°, at Wells on the 4th. The average precipitation was 0.82, or 0.47 above normal; the greatest monthly amount, 3.05, occurred at Palmetto; no rain fell at several stations.

New England.—The mean temperature was 67.8°, or 0.9° above normal; the highest was 100°, at Gardiner, Me., on the 12th, and the lowest, 28°, at West Milan, N. H., on the 1st. The average precipitation was 3.17, or 1.18 below normal; the greatest monthly amount, 5.02, occurred at Belfast and Cornish, Me., and the least, 1.38, at Nantucket, Mass. From the 5th to 13th there prevailed a spell of continuous and unusually hot weather. The maximum was not generally so high as has been experienced at other times, but the accumulated heat for the week was probably greater at most places than has ever been recorded. Prostrations from the effects of the heat and moisture were frequent and general, and the number of deaths due directly to that cause in Boston alone, is given at 68 by the City Board of Health.

New Jersey.—The mean temperature was 73.6°, or 1.6° above normal; the highest was 105°, at Toms River on the 6th and 9th, and the lowest, 39°, at Charlotteburg on the 29th and 30th. The average precipitation was 1.83, or 2.91 below normal; the greatest monthly amount; 3.27, occurred at Dover, and the least, 0.50, at Beverly.

New Mexico.—The mean temperature was about normal; the highest was 104°, at Los Luuas on the 13th, and the lowest, 32°, at Labelle on the 27th. The average precipitation was slightly below normal; the greatest monthly amount, 4.88, occurred at Alma, and the least, 0.31, at Rincon.

New York.—The mean temperature was 69.4°, or 1.3° above normal; the highest was 98°, at Bloomville on the 6th and 8th, and at Westfield on the 10th; the lowest was 33°, at Friendship on the 20th and 29th, and at South Kortright and New Lisbon on the 29th. The average precipitation was 3.14, or 0.53, below normal; the greatest monthly amount, 5.95, occurred at Plattsburg Barracks, and the least, 0.72, at Appleton.

North Carolina.—The mean temperature was 77.7°, or 1.9° above normal; the highest was 105°, at Saxon on the 9th, at Tarboro on the 10th, and at Goldsboro on the 11th; the lowest was 41°, at Linnville on the 30th. The average precipitation was 2.31, or 3.56 below normal; the greatest monthly amount, 5.48, occurred at Fairbluff, and the least, 0.73, at Oakridge.

North Dakota.—The mean temperature was 64.7°, or 3.0° below normal; the highest was 107°, at Medora on the 2d, and the lowest, 21°, at McKinney on the 27th. The average precipitation was 1.39, or 0.39 below normal; the greatest monthly amount, 4.55, occurred at Berlin, and the least, "trace," at Bottineau and Willow City.

Ohio.—The mean temperature was 73.2°, or 1.3° above normal; the highest was 102°, at Ottawa on the 9th and Thurman on the 10th, and the lowest, 35°, at Auburn on the 29th and 30th. The average precipitation was 3.38, or 0.29 above normal; the greatest monthly amount, 9.35, occurred at New Paris, and the least, 1.35, at Greenfield.

Oklahoma.—The mean temperature was 84.2°; the highest was 115°, at Healdton on the 2d, and the lowest, 48°, at Clifton and Pond Creek on the 24th. The average precipitation was 1.46; the greatest monthly amount, 3.31, occurred at Fort Reno, and the least, 0.34, at Beaver.

Oregon.—The mean temperature was 65.7°, or 0.5° below normal; the highest was 103°, at Grants Pass on the 22d, and the lowest, 29°, at Burns on the 3d and Fort Klamath on the 4th. The average precipitation was 1.04, or 0.74 above normal; the greatest monthly amount, 2.98, occurred at Government Camp, a mountain station, 7,000 feet above sea level.

Pennsylvania.—The mean temperature was 71.2°, or 1.3° above normal; the highest was 101°, at Aqueduct on the 9th and Honesdale on the 11th, and the lowest, 35°, at Dyberry and Saegerstown on the 29th. The average precipitation was 2.22, or 2.06 below normal; the greatest monthly amount, 6.53, occurred at West Newton, and the least, 0.45, at Ottsville.

South Carolina.—The mean temperature was 80.4°, or 1.6° above normal; the highest was 105°, at Gillisonville on the 10th, and the lowest, 52°, at Central on the 30th. The average precipitation was 4.14, or 1.99 below normal; the greatest monthly amount, 10.21, occurred at Kingstree, and the least, 1.02, at Clemson College. All crops deteriorated steadily during the month. The promising conditions of the previous month declined rapidly. Most crops ripened prematurely, especially cotton which opened very fast during the latter portion. It stopped fruiting or shed its fruit and even shed half grown bolls. Picking cotton began actively earlier than ever before known or recorded within the last fifty years. Much of the late corn began to dry before ears had formed on it.

South Dakota.—The mean temperature was 70.5°, or 1.7° above normal; the highest was 109°, at Nowlin on the 2d, and the lowest, 30°, at Castlewood on the 30th. The average precipitation was 1.22, or about 1.00 below normal; the greatest monthly amount, 3.23, occurred at Webster, and the least, 0.03, at Nowlin.

Tennessee.—The mean temperature was 78.1°, or about 3.0° above nor-

mal; the highest was 104°, at Covington on the 7th and 8th, and the lowest, 49°, at St. Joseph, on the 28th. The average precipitation was 1.75, or nearly 2.00 below normal; the greatest monthly amount, 7.63, occurred at Bristol, and the least, 0.07, at Fairmont.

Texas.—The mean temperature was 2.5° above the normal; there was a general excess except over the extreme western portion of the State, where it ranged from about normal to 0.8° below in the vicinity of El Paso. The excess in temperature ranged from 0.5° to 2.6° over the southwestern and the coast districts; from 2.9° to 3.4° over the central and eastern portions, and from 1.9° to 4.9° over the northern and Panhandle portions, with the greatest in the vicinity of Paris. Maximum temperature, 113°, observed at Panter, on the 2d, and 109° from self-recording thermometers, at Sulphur Springs on the 3d and 8th; minimum, 50°, at Dean on the 22d and 23d. The average precipitation for the State was 2.01 below the normal. There was a general deficiency throughout the State, ranging from 0.71 to 2.05 over the north, central, west, and southwest portions; from 1.49 to 2.34 over the Panhandle and eastern portions, and from 2.56 to 5.19 over the coast district, with the greatest in the vicinity of Galveston. The rainfall was generally light and not well distributed, there being very little during the first and second decades. The greatest monthly amount, 4.78, occurred at Fort Worth, while none fell at Point Isabel and Round Rock.

Utah.—The mean temperature was 69.7°, or about 5.0° below normal; the highest was 107°, at St. George on the 13th and 14th, and the lowest, 33°, at Soldier Summit on the 20th. The average precipitation was 1.04, or slightly above normal; the greatest monthly amount, 3.00, occurred at Parowan, and the least, 0.05, at Park City.

Virginia.—The mean temperature was 75.7°, or 0.7° above normal; the highest was 105°, at Nottoway Courthouse, and the lowest, 32°, at Guinea on the 20th. The average precipitation was 2.78, or about 0.80 below normal; the greatest monthly amount, 7.63, occurred at Bristol, and the least, 0.10, at Birdsnest. The thermal conditions for the month of August were noteworthy. Opening with means about normal, the temperature rose steadily, holding from 2° to 10° above the average and yielding maximums each day ranging between 90° and 105° from the 3d to the 16th. This phenomenal heat was accentuated by a most oppressive and debilitating sultriness, general absence of cloudiness and rainfall, and burning southerly winds. As a result, sunstrokes and heat prostrations were numerous and crops of all kinds suffered severely, cotton, peanuts, tobacco, late corn, and pastures, especially.

Washington.—The mean temperature was 65.3°, or 0.3° above normal; the highest was 104°, at Fort Simcoe on the 13th, and the lowest, 20°, at Cascade Tunnel on the 19th and 20th. The average precipitation was 0.85, or 0.24 above normal; the greatest monthly amount, 2.48, occurred at Tatoosh Island, and the least, 0.09, at Cascade Tunnel.

West Virginia.—The mean temperature was 72.4°, or slightly above normal; the highest was 97°, at Parkersburg on the 10th, and the lowest, 40°, at White Sulphur Springs on the 20th and Bloomery on the 29th. The average precipitation was 2.82, or 1.25 below normal; the greatest monthly amount, 5.69, occurred at Bluefield, and the least, 0.88, at Harpers Ferry.

Wisconsin.—The mean temperature was 69.0°, or 0.6° above normal; the highest was 102°, at Osceola Mills on the 4th, and the lowest, 31°, at Florence on the 19th and at Keopenick on the 24th. The average precipitation was 2.50, or 0.22 above normal; the greatest monthly amount, 6.32, occurred at Antigo, and the least, 0.75, at Gratiot.

Wyoming.—The mean temperature was 65.8°; the highest was 101°, at Fort Laramie on the 3d and Wheatland on the 14th, and the lowest, 25°, at Wheatland on the 26th. The average precipitation was 0.90; the greatest monthly amount, 2.52, occurred at Cheyenne, and the least, "trace," at Sheridan.

SPECIAL CONTRIBUTIONS.

EXPERIMENTS WITH KITES AT SAN FRANCISCO, CAL.

By W. H. HAMMON, Forecast Official (dated Sept. 19, 1896).

As early as February, 1896, Mr. Alexander McAdie began experiments at this station in flying kites for scientific purposes. With the aid of the San Francisco Examiner a team of over forty kites of the Eddy pattern were constructed. With the exception of two, of 9 feet beam, they were all of uniform size—68 by 60 inches. On February 19, 1896, the kites were taken to the summit of Mount Tamalpais, a small peak of 2,600 feet elevation, about 13 miles from the city, but the wind was too light to float the kites.

On February 22 the attempt was made to fly them from Sutro Heights, a bluff on the San Francisco side of the Golden Gate. Eighteen kites were let out in tandem, when the cord broke and the kites were lost. A dense fog afterward obscured the sky and prevented further experiments. However, it is believed that this is the largest team of kites ever flown in tandem. Early in March the writer, after having read vague descriptions of cellular kites, attempted to produce one. Having no knowledge of the methods of construction, one was made of somewhat elliptical or lune-shaped cells. The upper and lower surfaces of the cells were supported by light bamboo bows of about 90° arc, placed in the edges of the cells. Four of these bows attached at equal distances to the longitudinal ribs of the kite formed the frame for each surface. The kite was very efficient and light. One, 48 inches long and with 40-inch bows, containing nearly 18 square feet of area, weighed but 14 ounces when covered with No. 16 Irish hand linen paper. It could be flown to angles of from 45° to 70°, and remained very steady with winds from 7 to 22 miles per hour. With higher velocities the pressure of the wind upon the bows convex to the wind would distort the kite and cause it to dive. To prevent this, the bows of the lower side were extended beyond the ends of those forming the frame of the upper side of the cell. These ends were covered as well as the cell, thus forming wings to the kite.[1] The pressure of the wind against the kite caused the wings to bend backward; at the same time the two sides of the cells were spread farther apart. Thus the area of the kite normal to the wind was greatly reduced in winds of high velocity. This action tended to equalize the strain upon the string. The effective area of the kite would diminish about 40 per cent with an increase of wind velocity from 12 to 30 miles per hour. This effect was still further increased and the stability of the kite improved by the method adopted for attaching the string. Instead of using the usual bridle or bellyband, a stick was attached to the rear of the upper surface of the front cell and passed diagonally through the cell and allowed to extend from 16 to 18 inches below the lower surface. A flexible tube attached to the lower cell encased the stick, and to this tube the flying string of the kite was attached. As the upper and lower surfaces of the kite spread farther apart in high winds, the stick was withdrawn from the tube, thus shortening the bowsprit, which allowed the surfaces of the kite to become more nearly parallel to the wind. The bowsprit formed a rigid point of attachment for the string several inches in front of the surface of the kite, and also tended to increase its steadiness.

This kite has many advantages, but the continuous bending of the bows tends to loosen the joints which must be fastened by strings or wire, and the kite soon becomes less efficient. At the same time it is somewhat difficult to construct.

After reading the article by Prof. C. F. Marvin in the MONTHLY WEATHER REVIEW for November, 1895, experiments were made with the Hargrave and Potter designs of kites. It was found that with equal care in construction, kites of large size proved the more efficient. A slight inaccuracy in a long stick has less proportional effect than in a shorter one.

By the aid of an appropriation from the Weather Bureau, supplemented by a donation from the San Francisco Call, an attempt was made to fly a team of eight large cellular kites of three different patterns on July 4, 1896. Twenty-six pounds of piano wire was obtained (about 3½ miles in length). It was of sizes varying from .015 inch to .028 inch in diameter. It was made of pieces of from one-quarter to one pound each, joined together. The joints were made by sawing a deep

[1] See page 164 and Fig. 49, MONTHLY WEATHER REVIEW, for May, 1896.

groove in a piece of brass wire one-eighth of an inch in diameter and one inch long. The ends of the pieces to be spliced were twisted about one another, and were then laid in the groove and soldered. The joints were all tested to strains of from 50 to 150 pounds, the strain being proportioned to the probable pull of the kites. The size of the wire used was made commensurate to the strain that it was expected to stand, the larger wire being reserved for the lower end of the line which would be compelled to bear the combined pull of all the kites.

The kites were taken to Twin Peaks a hill 1,000 feet high west of the city. One of the kites was broken in transporting them. Several attempts were made to hoist them before noon, but while a wind of from 15 to 30 miles an hour prevailed near the surface, the kites would only rise 200 or 300 feet above the hill, when they would float away and downward, apparently upon the top of the current. During this time only very light winds prevailed over the comparative level surface of the city. It would seem that the draught of air from the west was concentrated over the top of the range of hills, of which Twin Peaks form a part, thus causing the wind to be high near their summits, but lighter at a small distance above; the hills evidently served the purpose of a dam in the current of air. By one o'clock the wind was blowing a gale of not less than 45 miles an hour near the surface, which wrecked every kite exposed to it. At the office in the city the maximum velocity measured was 28 miles. After breaking several kites in attempting to hoist them the remainder were loaded on the dray and brought back to the city, but all but one were broken either on the hill or while returning.

The experience of this trip convinced the writer that some more portable kite was essential. With this end in view, he has designed a kite of the Potter form in which the frame folds, making the sticks parallel and in contact. A kite of this character, 82 inches long, 62 inches wide, and 32 inches thick and of more than 40 square feet in area has been made. It can be spread in five minutes and folded in an equal time, its gross weight is 3 pounds 4 ounces. It has been flown six or eight times during the past two months, and in winds of from 10 to 25 miles per hour; while somewhat less rigid than the common frame, it has proved equally durable and efficient.

During the past two months we have flown kites on eight or ten occasions. Nearly every afternoon, in the summer time, a west wind of about 30 miles per hour prevails in San Francisco. In every instance the kites rose rapidly through this current, which seems to reach its maximum force (as evidenced by its pull on the wire) within 500 feet of the surface. At an elevation of from 800 to 2,500 feet the kites reach a stratum in which they refuse to rise. On July 29 three kites were let out in tandem, and all three floated off one behind the other at an elevation of about 2,000 feet. I think that a strong proof that this surface current has a depth of only 800 to 2,500 feet.

However, on August 28, with only moderate west winds (about 14 miles per hour) two kites were hoisted. After an elevation of about 1,000 feet was reached the kites began to drift more and more to the northward, the pilot kite being 10° to 12° north of the lower, this resulted in greatly increasing the angle made by the kites, which rose higher and higher. The winds were light, as shown by the strain on the string, but elevations of from 50° to 58° were made with from 3,800 to 4,600 feet of wire. Unfortunately there were but two serviceable kites at the station, which were unable to lift more than 6,656 feet of wire. The angle to the upper kite was then 33°, indicating an elevation of 3,650 feet above the roof of the office building from which the kites were flown, or 3,850 feet above the bay over which the kites were suspended. This is the greatest height we have attained.[1]

On the next day another hoist was made and the same south current was met at an elevation of 1,200 feet but it was lighter than on the day before. Only at times was it strong enough to lift the kites. The sky was pretty cloudy on both these days and on the earlier date the kites were frequently above the clouds which had an elevation of about 2,000 feet.

On the second day there was a very marked electrification of the air. Sparks one-third of an inch long could be taken from the wire without the use of a condenser and the escaping discharge would make an audible whistling noise when the connecting wire was 1½ inches from the ground connection. It is well to observe that on the following night (Saturday) and Sunday general rain fell throughout northern California, the heaviest August rain in many places of which we have a record.

In conclusion we would summarize the work performed at this station as follows:

First. A flight of eighteen kites in tandem by Mr. McAdie on February 22.

Second. Construction of a cellular kite which so adjusts itself as to render more nearly constant the lifting power of the kite and strain on the string in winds of varying velocity.

Third. Measurement of the altitude of the summer winds on many occasions.

Fourth. Construction of an efficient folding cellular kite of the Potter kind.

Fifth. We have certainly flown kites higher above the surface than has been accomplished by any other person west of the Mississippi River, and probably higher than the greatest ever attained by balloon or kite in this region.

Sixth. Discovered the existence of an unusual south wind above the surface current from the west on two days before the heaviest August rain in northern California, and an unusual electrification of the atmosphere on the day preceding the storm.

In all this work Mr. McAdie has rendered valuable assistance. The initial experiments were performed by him and, in all, he has given his hearty cooperation.

THE HEATED TERM FROM JULY 28 TO AUGUST 17, 1896.

By Prof. H. A. HAZEN.

During these three weeks the temperature remained abnormally high from the middle and lower Mississippi valley to the Atlantic Coast. In Missouri the temperature on each of these days was 7° to 8° above the normal and in the Middle Atlantic States it was 5° to 6° above. This term covered a larger region and gave abnormal heat on a larger number of consecutive days than ever before recorded. It can not be said that there were specially abnormal conditions in the atmosphere so far as shown by the high and low areas of pressure. During most of the period the air pressure remained high in the Gulf States and was accompanied by light variable winds and an almost stagnant air which was probably heated to great heights. The storms went far to the north and had little or no influence in modifying the conditions. The ground became very hot and there was less radiation to cool it during the period. It is also probable that the atmosphere was favorable to intense surface insolation because of some condition not well understood.

[1] On September 19, 1896, an elevation of 4,150 feet above roof and 4,350 feet above the bay was reached. The upper kite was for a large portion of the time lost in the clouds, which had an elevation of about 4,000 feet.

NOTES BY THE EDITOR.

MEXICAN CLIMATOLOGICAL DATA.

In order to extend the isobars and isotherms southward so that the students of weather, climate and storms in the United States may properly appreciate the influence of the conditions that prevail over Mexico the Editor has compiled the following tables from the current numbers of the Boletin Mensual as published by the Central Meteorological Observatory of Mexico. The data there given in metric measures have been converted into English measures. The barometric means are as given by mercurial barometers under the influence of local gravity, and therefore need reductions to standard gravity, depending upon both latitude and altitude; the influence of the latter is rather uncertain, but that of the former is well known. For the sake of conformity with the other data published in this REVIEW these corrections for local gravity have not been applied.

Mexican data for June, 1896.

Stations.	Altitude.	Mean barometer.	Mean temperature.	Relative humidity.	Precipitation.	Prevailing direction.	
						Wind.	Cloud.
	Feet.	*Inch.*	° *F.*	%	*Inch.*		
Colima (Seminario)	.....	28.25	82.0	68	3.37	ssw.	sw.
Colima	1,291.2	.....	83.8	.....	.....	.....	
Guadalajara (Obs. d. Est.)	5,188.0	24.97	75.2	81	13.59	.....	ne.
Guanajuato	6,761.3	23.68	69.8	47	3.95	ene.	ene.
Jalapa	4,757.3	25.55	69.4	75	15.61	n.	
Leon	5,901.0	24.28	73.8	42	1.15	ene.	
Magdalena (Sonora)	.....	.....	83.5	.....	0.67	.....	
Mazatlan	24.6	29.86	84.2	74	0.47	w.	e.
Merida	50.2	29.88	81.5	79	11.57	e.	e.
Mexico (Obs. Cent.)	7,488.7	23.08	65.5	54	1.17	n.	ne.
Mexico (E. N. de S.)	7,480.3	23.11	66.6	56	1.10	ne.	
Morelia (Seminario)	6,401.0	23.95	66.9	62	2.64	ne.	ne.
Oaxaca	5,164.4	25.00	72.9	63	4.22	nw.	ne.
Pabellon	6,312.4	.....	.....	.....	.....	.....	
Pachuca	7,956.3	22.59	59.5	63	0.56	nne.	
Puebla (Col. Cat.)	7,112.0	23.43	67.5	61	5.78	.....	
Queretaro	6,069.7	24.18	70.0	53	2.50	e.	e.
Saltillo (Col. S. Juan)	5,376.7	.....	.....	.....	.....	.....	
San Luis Potosi	6,201.9	24.15	70.5	53	0.33	e.	e.
Silao	6,063.1	24.25	74.5	57	1.71	ne.	ne.
Toluca	8,612.4	29.91	61.3	44	3.75	ene.	ne.
Trejo (Hac. Silao, Gto.)	.....	.....	.....	.....	3.71	.....	
Zacatecas	8,015.2	22.55	68.7	48	1.51	e.	ne.
Zapotlan (Seminario)	5,124.8	25.05	73.9	.....	6.17	se.	ne.

Mexican data for July, 1896.

Stations.	Altitude.	Mean barometer.	Mean temperature.	Relative humidity.	Precipitation.	Prevailing direction.	
						Wind.	Cloud.
	Feet.	*Inch.*	° *F.*	%	*Inch.*		
Colima (Seminario)	.....	28.30	80.6	72	4.98	wsw.	
Colima	1,291.7	.....	82.0	.....	.....	.....	
Culiacan	112.2	.....	.....	.....	.....	.....	
Guadalajara (Obs. d. Est.)	5,188.0	25.02	70.2	83	13.60	nnw.	ne.
Guanajuato	6,761.3	23.72	68.2	53	1.70	ene.	e.
Jalapa	4,757.3	25.61	66.9	87	14.79	e.	
Lagos (Liceo Guerra)	6,274.6	24.21	70.3	55	1.86	e.	e.
Leon	5,901.0	24.33	72.0	53	1.86	se.	ene., ese.
Magdalena (Sonora)	.....	.....	84.2	.....	.....	s., w.	n.
Mazatlan	24.6	29.90	85.1	76	7.12	nw.	e., ne.
Merida	50.2	29.98	81.0	77	3.81	ne.	e.
Mexico (Obs. Cent.)	7,488.7	23.11	63.5	65	3.92	n.	ne.
Mexico (E. N. de S.)	7,480.5	23.06	65.7	69	3.74	nw.	
Morelia (Seminario)	6,401.0	24.00	63.5	71	5.19	ne.	ne.
Oaxaca	5,164.4	25.10	72.3	64	2.57	nw.	ne.
Pabellon	6,312.4	24.01	71.2	57	2.61	se.	e.
Pachuca	7,956.3	22.56	57.6	69	0.47	ne.	
Puebla (Col. Cat.)	7,112.0	23.45	65.8	64	4.17	.....	
Queretaro	6,069.7	24.22	69.1	61	1.02	e.	ene.
Saltillo (Col. S. Juan)	5,376.7	24.97	73.8	65	2.72	ne.	n.
San Luis Potosi	6,201.9	24.20	63.7	63	0.25	e.	e.
Silao	6,063.1	24.29	72.7	68	3.40	ne.	ne.
Tacubaya (Obs. Nac.)	7,630.2	.....	.....	.....	.....	.....	
Toluca	8,612.4	21.96	60.3	63	6.46	ese.	ne.
Trejo (Hac. Silao, Gto.)	.....	.....	.....	.....	3.16	.....	
Zacatecas	8,015.2	22.59	65.1	61	1.61	e.	e.
Zapotlan (Seminario)	5,124.8	25.09	71.1	.....	10.25	.....	

THE PERIODICITY OF GOOD AND BAD SEASONS.

A lecture on the above subject, delivered June 3, 1896, by H. C. Russell, director of the astronomical observatory and also of the meteorological service at Sydney, N. S. W., is published in an abridged form in the English journal Nature, for August 20, 1896. The importance of long-range predictions to the agricultural interests of the United States demands that we give our careful attention to the discovery announced by Mr. Russell that, in general, there is a periodicity of nineteen years in the occurrence of droughts. He began by studying the statistics of the records in Australia since 1788, the date of the foundation of the colony of New South Wales, and here first found evidence of a 19-year period. He next found that the droughts of India coincided with those of Australia, so far as the records went, and that he could, by means of the Indian record, plausibly locate the greatest of all the droughts in Australia as having occurred in 1769–70. Up to this time he had not studied the ordinary dry years separately from those in which phenomenal droughts occurred, but had found that bad or droughty years usually came in groups of from three to seven. The end of the first and the beginning of the second year of drought was the date used by him in his studies.

Russell now divided the droughts into first and second class, treating each separately, and proceeded to study European statistics. Between the years 900 and 1896, A. D., the interval of nine hundred and ninety-six years embraces about fifty-two periods of nineteen years each; he found that of the fifty-two repetitions of years when droughts should be expected they were actually present on forty-four of these; of the eight missing years, six occurred between 900 and 1000, A. D., when the historical record is very incomplete. Starting with 1896, and reckoning backward to 900, Russell found 78 droughts in different countries somewhere in the world that fit into the period of recurrence of droughts of the first class. During the same period he found that there should be fifty-one returns of the year that is characterized by second-class droughts, and that history actually records 89 such droughts in different countries on thirty-six of these periods. There is, therefore, a total of 167 droughts between the years 900 and 1896 that occur on the years when droughts are to be expected, according to Russell's 19-year period, and there remain only 41 other droughts on record, scattered through various discordant years; of these latter, 26 are considered by him to belong to a third class, that is irregular in Australia, but more regular and more important in the Northern Hemisphere. Mr. Russell, therefore, claims that out of 208 recorded droughts, 193 fit into his cycle of nineteen years, and that as this cycle has continued for a thousand years, so it may be trusted to justify forecasts based upon it.

Going farther back in history, our author finds that of 20 droughts recorded in B. C. years, 19 fit into his drought cycle, and the fact of such a remarkable agreement is urged as a confirmation of the historical chronology, although it seems reasoning in a circle. The drought predicted to Pharaoh by Joseph apparently belongs to the same period as that predicted by Elijah forty-two cycles (or forty-two times nineteen years) later; the drought predicted by Elisha occurred nineteen years, or one cycle, after that of Elijah, and these ancient predictions seem to Russell to show that the Egyptians and Jews knew of this 19-year period. He even considers it possible that the records kept by the Assyrians since the year 3800 B. C. must have shown them this 19-year period in droughts, as it is known to have also shown them the similar period of eighteen years in eclipses.

Russell further finds that red rains, due to red dust floating in the atmosphere, argue the prevalence of very dusty weather; at least, it is true that in New South Wales red rain and red dust immediately attend severe droughts. He finds that, beginning with the year 738 B.C., there are 69 recorded falls of red rain, every one of which fits into his 19-year cycle. If these were really due to droughts, then they add ten more records of drought years to the one hundred and ninety-three quoted above, and leave only five years on which no droughts are recorded out of two hundred and eight years in which they should have occurred according to Russell's cycle. But, furthermore, Mr. Russell states that great hurricanes, great frosts, and even the wet years and the fluctuations of the great lakes of the world, all fit into this cycle. Finally, he suggests that, as these statistics all point toward a lunar influence, he has, therefore, examined this subject with the following results:

1. Great droughts of the first class occur in the years when the dates of eclipses accumulate near March 21 and September 21.

2. Droughts of the second class (of shorter duration, but more intense than those of the first class), together with gales and hurricanes, occur when the dates of eclipses accumulate in February or just before March 21 and in August or just before September 21.

3. Droughts that are less severe in intensity than those of the first class, but last much longer than those of the second class, occur when the dates of eclipses accumulate in April or just after March 21 and in October, or just after September 21.

Remarks on the above.—For some years past the search for periodicities in meteorological phenomena has apparently abated; the small value of the so-called sun spot or 11-year period in recent years seemed to show that after all there were no important astronomical periodicities in meteorology, and students have therefore directed their attention more to the complex results that flow from the variations of moisture and of insolation combined with the irregularities of the earth's surface. It has, in fact, been very plausibly shown to be probable that no long-continued periodicity can be maintained in the atmosphere by the annual and diurnal changes in insolation, and that if such periods exist they must be maintained (or their existence must be forced) by the direct action of some external body. Inasmuch as the 11-year sun spot and the 28-day lunar periods are rarely appreciable and inasmuch as Laplace has shown that solar and lunar semidiurnal tidal waves in the atmosphere, due to the action of gravitation, must be inappreciable it would seem that there is very little reason left to expect any other periodicity to be forced upon the atmosphere. On the other hand Mons. A. Poincaré, of the Meteorological Society of France, by a laborious study of the daily international maps of the Northern Hemisphere showed that there is a small systematic periodic northward and southward movement of the large areas of high pressure that form a permanent feature of the Atlantic and Pacific Oceans, and that this movement depends upon the movement of the moon from the north to the south side of the earth's equator, or *vice versa*, in the course of its monthly revolution around the earth in its own orbit. This oscillation north and south of the tropical areas of high pressure is therefore a semimonthly or 14-day lunar tide. By virtue of this tide the regions of easterly trades and of westerly winds have their boundaries periodically displaced and any one station near their boundaries would probably experience a variation in the intensity and direction of the wind depending upon the lunar month; probably a similar variation in rainfall and cloudiness would also be found for such locations, but not necessarily for the world in general.

It is evident that when the sun and moon conspire, that is to say, when both are north of the equator, or both south, these tidal influences will be most conspicuous, and this is what happens when eclipses occur. Inasmuch as eclipses recur every eighteen years and eleven and one-third days one would therefore naturally look for an 18-year period superposed upon the lunar monthly period already indicated and this 18-year period would show itself not only in the time of occurrence, but especially in the intensity of the disturbances. For example, if the high area, with its northeast winds and clear skies, which brings dry weather to Spain and Portugal, moves eastward or northward whenever the moon is farthest north of the equator, and especially so when the sun is also farthest north, then this combination (which occurred on the 28th of June, 1878, and on the 8th of July, 1896,) should mark the year when droughts may be expected in that region; of course the rainy regions are also pushed farther north in Europe and Great Britain. During the whole of the years 1878 and 1896 the moon attained extreme northerly and southerly positions, and under the tidal influence of the moon there was a tendency of the areas of high pressure throughout the world to assume a more northerly position than in 1887, which is midway between.

If the semimonthly lunar tide, explained in the previous paragraph, has any influence on the tropical areas of high pressure and on the weather at their boundaries, then when the moon is persistently farthest north in combination with the sun, as in the summers of 1878 and 1896, we ought to have relatively warm, clear, dry weather in western Europe and on the west coast of North America; relatively cold and rainy weather south of latitude 40° S. in Australia and South America; relatively dry, warm, and clear in the rest of Australia, in southern Africa, and on the west coast of South America. It is plausible that by assembling a large number of predictions, based on the general circulation of the atmosphere one may demonstrate that during the last half century, or since the beginning of the publication of daily weather maps there has been an appreciable connection between the motions of the moon and the general character of the seasons on the borders of the great areas of high pressure. Inasmuch, however, as the lunar tidal influence can stimulate the production of rain in one region of the globe while it simultaneously produces drought in another, therefore one must be very careful not to consider the droughts in any two regions as confirmatory of the lunar influence unless these regions have the proper geographical situation relative to the areas of high pressure, and unless corresponding unusual rains occur in other properly located regions.

As a rule, droughts that are sufficiently severe to seriously affect crops or produce famine, are, in the United States, the culmination of several years of rains so light that the ground has become dried out to a considerable depth, they are, however, distinctly of a local character, rarely covering twenty-five square degrees. They represent small spots of great deficiency, while a larger area of general deficiency exists near by, and other areas of excess exist farther away. From our limited point of view we consider the locations of these areas to be determined by accidental causes, the general outcome of which is the formation of areas of descending air, clear sky, and less than normal rainfall. But there are some cases in which the drought is due to the weakness of the horizontal wind, as in India, where a failure of the southwest monsoon—or in the Island of St. Helena, where the failure of the southeast trade—or the Barbadoes, where the failure of the northeast trade is disastrous; these are cases where the ordinary rain depends directly upon the ascent of air that is pushed from the lower stratum up over hills and mountains. One should be very careful about combining the records of droughts in these localities with the records from regions where rainfall is due to more general causes. Again, the records of famine in lower Egypt have little or no relation

to the rainfall in that country but depend entirely upon the proper utilization of the annual overflow of the Nile, whose waters come from two sources, Abyssinia and Central Africa. This water supply for the Nile depends, like that of the Mississippi, upon two or three rainy regions, each of which is governed by its own laws. We should fall into hopeless confusion if we should indiscriminately combine together the records of droughts in such various climatic regions in hopes of deducing natural periodicities or other meteorological laws.

ON HIGHS AND LOWS.

A correspondent in Dublin, Ind., requests the Editor of the REVIEW to give its readers "some information on high and low in regard to the barometer; it is not clear to some whether high refers to the long or short arm of the mercury and low *vice versa*."

The words "high" and "low" are used as contractions for "high pressure" and "low pressure." Inasmuch as atmospheric pressure is measured by the barometer, these expressions are also equivalent to saying that the column of mercury in the barometer is a tall or a short one. If a syphon barometer is used, the top of the long column is above the top of the short column by a larger or smaller amount; the difference in height between the tops of the long and short column is usually more than 30 inches when the pressure is high and less than 30 inches when the pressure is low and when the station is near sea level. If an aneroid barometer is used, the index or pointer usually turns toward the right hand for higher pressures and toward the left hand for lower pressures.

If the reader has access to a map showing the condition of the atmosphere at any time, and such weather maps are distributed by thousands every day, he will perceive that the published barometric pressure is expressed in inches and hundredths and that the height of the barometric column ranges between 28 and 31 inches. The map shows, by means of isobaric lines, the regions where the pressure is the same. Some of these isobars inclose a region of high pressure and others a region of low pressure. These regions move along day by day, as shown by successive maps, and the tracks pursued by their centers are published regularly on Charts I and II of the MONTHLY WEATHER REVIEW. High areas are the regions of high barometric pressure and low areas are the regions of relatively low barometric pressure. With the high areas we usually associate cool or cold, dry, clear weather and gentle winds. With the low areas we usually expect warmer, moist, cloudy, and rainy weather and strong winds, and sometimes also thunderstorms, tornadoes, and hailstorms. Therefore, the low areas are sometimes spoken of as storm centers.

The term barometric pressure or simply barometric reading is often used without realizing its meaning in meteorology. Ordinarily we appreciate the temperature of the air by our personal sensations so clearly that when we see a record of 100° F., we instinctively think of the heat and the temperature, and the most ordinary meteorological observer doubtless sees in his mind's eye the relative levity or buoyancy of the air, due to the fact that it is expanded by high temperature. But our nervous organization is not generally sensitive to the ordinary changes of atmospheric pressure; we have not a mechanical sense to tell us of the pressure or push of the ordinary air. Occasionally one will be found whose ears ring when the atmospheric pressure is high or whose nerves pain him when the pressure is low. To the meteorologist, however, the expression high or low pressure conveys an idea of force exerted in compressing the atmosphere and of expansive force within every cubic inch by which it tries to enlarge its boundary. To him a high barometer means that the air is being condensed by pressure, and *vice versa* a low barometer that the air is expanding by reason of the relief of pressure. The pressure ordinarily exerted by the atmosphere is about 15 pounds to the square inch. This pressure would balance the weight of a column of mercury 1 inch square and 30 inches high. This is the pressure that is holding every cubic inch of our lower atmosphere within its bounds; if the pressure relaxes the cubic inch of air expands. If, for instance, the weather map shows that a region of low pressure is advancing upon any station, the observer may expect to find the air within any confined space push outward through every possible aperture; the air in the soil comes up; that within a cavern pushes out through the entrance; bubbles of air in liquids expand in size; hermetically sealed cans bulge outward. These and similar phenomena show the observer that the pressure of the atmosphere upon all bodies at the surface of the earth has diminished and that internal pressures that before were counterbalanced by the atmospheric pressure now have the preponderance. The force that pushes the air forward when the wind blows is this atmospheric pressure of about 15 pounds to the square inch, or rather it is the difference in atmospheric pressure, since the full pressure of 15 pounds to the square inch could only come into play when the air or wind is blowing into an absolute vacuum.

The motion of the wind is the result of pressure from behind just as truly as is the motion of the piston rod of a locomotive engine. The piston usually has the atmospheric pressure of 15 pounds to the square inch on one side of it and the steam pressure of 100 or 200 pounds to the square inch on the other side, and this great difference of pressure is necessary in order that so small a piston may do so much work. The pressure and the action of the steam engine piston are intense. On the other hand, in the atmosphere a small portion of air moving along as a rapid wind has a very little excess of pressure in the rear over that in front. A vertical sheet of air 1 foot thick moving forward as the front of a violent gust may, for instance, have a pressure of 29.50 inches in front and 29.51 inches in the rear; this difference of .01 of an inch is about $\frac{1}{2950}$ of the whole pressure, or about 0.005 pounds per square inch, or 0.72 pounds per square foot. Now, a cubic foot of air weighs about $\frac{1}{13}$ of a pound, and as the above force is continuously pushing this mass, it soon gives it a great velocity, and maintains it at that velocity by continuously overcoming friction and other resistances. The atmospheric pressure pushing from all sides toward a region of low pressure soon sets the air into a whirling motion; it may be on a very small scale, forming a waterspout or a tornado that would scarcely make any show on our daily weather map, or it may be in great whirls, such as constitute hurricanes or other cyclonic storms, and which are those treated of in the chapter on areas of low pressure.

METEOROLOGICAL TABLES.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

Table I gives, for about 130 Weather Bureau stations making two observations daily and for about 20 others making only the 8 p. m. observation, the data ordinarily needed for climatological studies, viz, the monthly mean pressure, the monthly means and extremes of temperature, the average conditions as to moisture, cloudiness, movement of the wind, and the departures from normals in the case of pressure, temperature, and precipitation.

Table II gives, for about 2,400 stations occupied by voluntary observers, the extreme maximum and minimum temperatures, the mean temperature deduced from the average of all the daily maxima and minima, or other readings, as indicated by the numeral following the name of the station; the total monthly precipitation, and the total depth in inches of any snow that may have fallen. When the spaces in the snow column are left blank it indicates that no snow has fallen, but when it is possible that there may have been snow of which no record has been made, that fact is indicated by leaders, thus (. . . .).

Table III gives, for about 30 Canadian stations, the mean pressure, mean temperature, total precipitation, prevailing wind, and the respective departures from normal values. Reports from Newfoundland and Bermuda are included in this table for convenience of tabulation.

Table IV gives detailed observations at Honolulu, Republic of Hawaii, by Curtis J. Lyons, meteorologist to the Government Survey.

Table V gives, for 26 stations, the mean hourly temperatures deduced from thermographs of the pattern described and figured in the Report of the Chief of the Weather Bureau, 1891–'92, p. 29.

Table VI gives, for 26 stations, the mean hourly pressures as automatically registered by Richard barographs, except for Washington, D. C., where Foreman's barograph is in use. Both instruments are described in the Report of the Chief of the Weather Bureau, 1891–'92, pp. 26 and 30.

Table VII gives, for about 130 stations, the arithmetical means of the hourly movements of the wind ending with the respective hours, as registered automatically by the Robinson anemometer, in conjunction with an electrical recording mechanism, described and illustrated in the Report of the Chief of the Weather Bureau, 1891–'92, p. 19.

Table VIII gives the danger points, the highest, lowest, and mean stages of water in the rivers at cities and towns on the principal rivers; also the distance of the station from the river mouth along the river channel.

Table IX gives, for all stations that make observations at 8 a. m. and 8 p. m., the four component directions and the resultant directions based on these two observations only and without considering the velocity of the wind. The total movement for the whole month, as read from the dial of the Robinson anemometer, is given for each station in Table I. By adding the four components for the stations comprised in any geographical division one may obtain the average resultant direction for that division.

Table X gives the total number of stations in each State from which meteorological reports of any kind have been received, and the number of such stations reporting thunderstorms (T) and auroras (A) on each day of the current month.

Table XI gives, for 38 stations, the percentages of hourly sunshine as derived from the automatic records made by two essentially different types of instruments, designated, respectively, the thermometric recorder and the photographic recorder. The kind of instrument used at each station is indicated in the table by the letter T or P in the column following the name of the station.

Table XII gives a record of the heaviest rainfalls for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering rain gauges.

Table XIII gives the record of excessive precipitation at all stations from which reports are received.

Additional information concerning the tables will be found in the REVIEW for January, 1895.

NOTES EXPLANATORY OF THE CHARTS.

Chart I.—Tracks of centers of low pressure. The roman letters show number and order of centers of low areas. The figures within the circles show the days of the month; the letters *a* and *p* indicate, respectively, the 8 a. m. and 8 p. m., seventy-fifth meridian time, observations. The queries (?) on the tracks show that the centers could not be satisfactorily located. Within each circle is given the lowest barometric reading reported near the center. A blank indicates that no reports were available. A wavy line indicates the axis of a trough or long oval area of low pressure.

Chart II.—Tracks of centers of high pressure. The roman letters show number and order of centers of high areas. The figures within the circles show the days of the month; the letters *a* and *p* indicate, respectively, the 8 a. m. and 8 p. m., seventy-fifth meridian time, observations. The queries (?) on the tracks show that the centers could not be satisfactorily located. Within each circle is given the highest barometric reading reported near the center. A blank indicates that no reports were available. A wavy line indicates the axis of a ridge of high pressure.

Chart III.—Total precipitation. The scale of shades showing the depth of rainfall is given on the chart itself. For isolated stations the rainfall is given in inches and tenths, when appreciable; otherwise, a "trace" is indicated by a capital T, and no rain at all, by 0.0.

Chart IV.—Sea-level isobars, surface isotherms, and resultant winds. The wind directions on this Chart are the computed resultants of observations at 8 a. m. and 8 p, m., daily; the resultant duration is shown by figures attached to each arrow. The temperatures are the means of daily maxima and minima and are not reduced to sea level. The pressures are the means of 8 a. m. and 8 p. m. observations, daily, and correspond to Professor Hazen's system of reduction; the barometer is not reduced to standard gravity, but the necessary reduction for 30 inches of the mercurial barometer is shown by the marginal figures for each degree of latitude.

TABLE I.—*Climatological data for Weather Bureau Stations, August, 1896.*

Stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure in inches.			Temperature of the air, in degrees Fahrenheit.								Humidity and precipitation.				Wind.				Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Monthly temperature data since opening station.			
			Mean pressure, 8 a.m. and 8 p.m. + q.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.			Absolute maximum.	Year.	Absolute minimum.	Year.
New England.						68.0	+ 1.1										2.39	— 1.6											
Eastport	78	24	29.93	30.02	+ .05	59.6	— 1.2	78	11	67	48	30	53	23	53	86	1.07	— 2.4	9	5,312	s.	37	s.	23	5	17	9	6.1	90	1893	45	1880
Portland, Me	103	25	29.88	29.98	.00	66.1	+ 1.1	90	12	74	49	30	59	26	62	90	2.57	— 1.2	18	4,224	s.	24	s.	30	10	10	11	5.8	95	1876	46	1894
Northfield	872	10	29.10	30.02	+ .04	64.0	+ 1.3	90	11	76	37	29	52	36	58	82	2.27	— 2.4	12	5,204	s.	37	nw.	19	6	17	8	5.5	91	1893	33	1894
Boston	125	26	29.89	30.02	+ .03	70.7	— 2.2	95	10	78	52	30	63	26	61	74	2.15	— 2.3	13	6,187	sw.	35	n.	5	12	13	6	4.6	97	1881	47	•
Nantucket	14	10	30.03	30.04	+ .02	68.2	+ 0.8	86	10	74	54	30	62	18	63	88	1.38	— 1.8	9	5,846	sw.	33	n.	5	14	8	9	4.8	86	•	53	1887
Woods Hole	.....	10	.....	.....	.....	69.2	+ 0.7	87	11	74	58	30	64	17	.....	.....	2.99	— 1.0	9	7,259	se.	42	se.	2	21	5	5	2.6	87	1896	52	1890
Vineyard Haven	.....	10	.....	.....	.....	71.4	+ 0.4	92	12	79	52	31	64	24	.....	.....	2.81	— 1.4	7	.....	sw.	.....	.....	...	13	7	11	....	92	1896	52	1890
Block Island	27	16	30.01	30.04	+ .03	69.0	+ 0.9	86	10	74	56	30	64	17	64	85	2.08	— 1.4	9	7,926	sw.	46	n.	5	10	15	6	5.2	86	1896	49	1887
Narragansett Pier	.....	15	.....	.....	.....	70.0	+ 1.6	89	10	78	47	30	62	27	.....	.....	3.97	+ 0.3	8	.....	s.	.....	.....	...	20	4	7	....	94	1891	43	1894
New Haven	107	24	29.91	30.02	.00	71.3	+ 2.8	94	12	80	50	30	63	23	63	77	2.57	— 2.6	10	5,019	n.	25	nw.	18	16	7	8	4.1	94	1896	45	1885
Mid. Atlan. States.						75.9	+ 2.2										1.97	— 2.7											
Albany	85	21	29.94	30.03	+ .04	72.6	+ 2.4	95	10	82	50	29	63	26	62	74	2.25	— 1.8	10	5,006	s.	34	w.	6	17	13	1	3.6	95	1896	45	1875
New York	314	26	29.71	30.04	+ .02	73.0	+ 1.2	94	11	80	56	19	66	33	65	78	2.46	— 2.2	10	7,525	nw.	50	nw.	9	17	11	3	3.9	96	•	51	•
Harrisburg	377	9	29.63	30.05	+ .02	73.7	+ 1.6	95	7	83	50	30	63	29	63	72	1.45	— 3.1	11	3,887	w.	30	w.	7	13	9	9	4.6	95	•	50	•
Philadelphia	117	26	29.93	30.05	+ .02	76.6	+ 2.6	97	11	86	56	30	68	25	62	66	0.46	— 3.9	6	6,100	sw.	32	nw.	9	14	9	8	4.5	99	1881	51	1890
Baltimore	142	26	29.92	30.05	+ .02	76.2	+ 1.7	98	7	86	54	30	67	27	63	65	1.93	— 2.1	8	3,122	n.	25	n.	12	15	11	5	4.0	98	•	51	1890
Washington	112	26	29.94	30.06	+ .02	75.8	+ 2.3	98	6	86	50	30	66	29	64	72	2.65	— 1.3	7	3,740	n.	24	n.	31	20	6	5	3.1	101	1881	49	1890
Cape Henry	.....	21	.....	.....	.....	78.8	+ 2.4	100	7	86	58	21	71	30	.....	.....	2.42	— 3.4	2	.....	se.	.....	.....	...	17	11	3	....	103	1881	57	1888
Lynchburg	685	26	29.37	30.09	+ .06	76.8	+ 2.3	98	10	87	52	30	66	32	65	72	2.04	— 2.0	9	2,105	ne.	26	n.	16	14	15	2	3.7	100	1881	47	1890
Norfolk	57	26	30.00	30.06	+ .04	79.2	+ 3.4	98	8	81	61	31	71	26	70	79	2.05	— 4.1	6	4,876	ne.	36	w.	2	19	8	4	3.6	99	1881	56	1888
S. Atlantic States.						80.5	+ 2.1										3.42	— 3.5											
Charlotte	773	18	29.27	30.06	+ .04	79.4	+ 2.9	99	10	90	55	30	69	29	65	69	1.05	— 4.3	8	3,899	s.	25	ne.	14	17	11	3	3.6	100	•	53	1887
Hatteras	11	16	30.06	30.07	+ .05	79.4	+ 2.2	90	11	84	66	31	74	14	71	80	1.44	— 4.9	4	8,257	sw.	33	ne.	29	16	12	3	3.5	92	•	60	1879
Kittyhawk	9	22	30.05	30.06	+ .05	79.3	+ 1.9	95	9	85	64	31	74	20	71	78	2.65	— 4.2	6	9,567	sw.	36	ne.	29	21	5	5	3.3	102	1888	58	1888
Raleigh	398	10	29.67	30.07	+ .02	78.7	+ 3.1	99	10	89	56	30	69	38	67	74	4.19	— 3.8	8	3,443	s.	25	n.	10	13	16	2	4.2	99	1896	52	•
Wilmington	78	26	30.00	30.08	+ .06	79.0	+ 1.2	95	9	87	59	30	71	24	70	81	2.48	— 5.0	7	5,081	sw.	27	e.	3	14	12	5	4.3	99	1878	56	1887
Charleston	52	26	30.06	30.11	+ .09	81.2	+ 1.4	95	3	87	64	30	75	23	73	82	4.72	— 2.9	9	5,505	sw.	30	nw.	18	9	17	5	4.9	98	1895	62	1879
Columbia	.....	10	.....	.....	.....	81.2	+ 2.6	101	10	92	56	30	71	32	.....	.....	2.38	— 3.4	7	.....	sw.	.....	.....	...	15	13	3	....	101	1896	56	•
Augusta	180	25	29.88	30.07	+ .07	82.0	+ 2.0	100	10	92	58	30	72	28	70	75	3.31	— 1.9	12	3,324	se.	26	nw.	4	13	13	5	4.6	105	1878	58	•
Savannah	98	26	29.99	30.09	+ .06	81.8	+ 2.0	98	3	91	61	30	73	27	73	81	5.78	— 2.0	11	4,769	s.	32	nw.	18	20	5	6	3.9	100	1878	61	1896
Jacksonville	43	25	30.03	30.08	+ .06	82.8	+ 1.3	96	4	92	64	31	74	25	72	80	6.16	— 0.3	10	4,832	s.	26	w.	2	15	15	1	4.1	100	1874	64	•
Florida Peninsula.						83.7	+ 0.3										4.85	— 1.7											
Jupiter	28	9	30.06	30.09	+ .04	82.2	+ 0.5	93	30	88	71	•	76	17	75	82	4.32	— 0.8	14	5,277	e.	22	s.	19	14	11	6	4.5	93	•	68	•
Key West	22	26	30.06	30.08	+ .07	84.0	— 0.1	90	21	89	71	31	79	18	74	74	2.37	— 2.4	15	5,431	e.	30	nw.	29	9	20	2	4.6	100	1896	68	1894
Tampa	36	7	30.05	30.09	+ .08	82.0	+ 0.5	95	10	90	66	30	74	21	74	81	7.96	— 1.8	14	3,676	se.	26	se.	6	9	21	1	4.5	95	•	66	1896
East Gulf States.						82.4	+ 2.6										3.56	— 2.0											
Atlanta	1,131	18	28.93	30.08	+ .04	80.4	+ 3.9	96	12	90	64	30	71	26	67	70	1.97	— 2.7	6	5,348	ne.	37	sw.	3	21	8	2	3.0	96	•	55	1887
Pensacola	56	17	30.01	30.07	+ .06	82.7	+ 2.0	97	5	90	70	1	75	26	73	78	5.87	— 2.5	12	5,860	nw.	39	nw.	11	10	19	2	4.9	97	1896	62	1891
Mobile	57	26	30.05	30.09	+ .08	82.4	+ 1.9	97	5	91	69	26	74	23	72	79	4.05	— 2.8	15	4,446	sw.	37	se.	26	9	17	5	5.4	100	1874	57	1891
Montgomery	221	24	29.83	30.06	+ .05	83.3	+ 3.5	99	12	93	68	28	73	24	71	74	2.31	— 1.8	8	3,597	sw.	30	sw.	13	15	13	3	3.9	103	1874	58	1891
Meridian	338	7	29.68	30.05	+ .03	82.0	+ 4.2	100	12	93	62	28	71	30	70	76	6.39	+ 2.6	8	3,113	sw.	28	n.	18	3	25	3	6.0	100	1896	49	1891
Vicksburg	254	25	29.78	30.04	+ .02	83.0	+ 2.3	100	13	94	57	28	72	32	70	72	1.11	— 2.4	8	4,013	sw.	32	sw.	10	20	9	2	3.0	100	•	54	1891
New Orleans	54	26	30.02	30.08	+ .08	83.0	+ 1.5	96	5	90	70	9	76	21	72	76	3.31	— 2.8	12	4,658	sw.	28	ne.	5	14	14	3	3.8	96	•	63	1891
Port Eads	.....	10	.....	.....	.....	82.8	+ 1.2	93	18	88	70	•	78	18	75	77	3.49	— 3.7	11	.....	nw.	.....	.....	...	1	20	10	6.0	.....	.....	.....	.....
West Gulf States.						83.9	+ 2.7										1.26	— 2.3											
Shreveport	249	25	29.78	30.03	+ .03	84.8	+ 2.6	106	26	96	60	29	73	32	67	65	0.78	— 1.4	7	4,092	s.	29	n.	27	16	9	6	3.6	106	1896	54	1891
Fort Smith	481	15	29.51	30.00	+ .03	84.6	+ 5.9	107	3	98	59	29	72	35	64	58	1.31	— 2.4	7	4,371	e.	24	s.	11	22	5	4	3.2	107	1896	45	1891
Little Rock	302	18	29.74	30.04	+ .04	82.8	+ 3.3	105	1	94	60	29	72	29	64	61	1.82	— 2.3	7	4,160	sw.	28	n.	18	15	11	5	3.7	105	1896	52	1891
Corpus Christi	20	10	30.02	30.04	+ .04	82.0	+ 0.5	92	24	88	70	30	76	18	76	83	0.53	— 2.6	6	8,914	se.	30	se.	7	17	13	1	3.7	94	1889	65	1891
Galveston	42	26	30.04	30.08	+ .09	84.0	+ 1.2	94	27	89	70	27	79	34	74	75	0.35	— 5.2	6	6,577	s.	44	ne.	27	23	4	4	2.8	98	1874	68	1891
Palestine	510	15	29.52	30.05	+ .04	84.3	+ 3.1	102	6	96	60	29	72	34	67	66	1.19	— 1.5	5	4,237	s.	23	nw.	27	9	19	3	4.8	102	1896	54	1891
San Antonio	704	18	29.31	30.03	+ .05	84.8	+ 2.6	100	22	96	67	29	73	32	66	63	2.96	— 0.9	5	5,743	se.	40	se.	7	15	12	4	3.8	108	1877	57	1891
Ohio Val. & Tenn.						76.5	+ 2.2										2.99	— 0.7											
Chattanooga	762	18	29.30	30.08	+ .05	80.4	+ 3.9	97	13	91	63	30	70	28	67	70	1.90	— 2.3	7	3,822	ne.	25	nw.	23	15	13	3	4.1	100	1881	54	1891
Knoxville	980	26	29.07	30.07	+ .03	78.2	+ 3.5	94	11	88	60	30	68	26	67	75	1.25	— 2.8	4	3,310	w.	29	w.	23	20	8	3	3.5	100	1881	50	1879
Memphis	399	26	29.64	30.05	+ .04	82.3	+ 3.8	101	1	93	60	29	72	26	66	66	0.84	— 2.8	9	5,592	n.	42	w.	4	17	13	1	3.4	102	1881	53	1891
Nashville	545	26	29.49	30.06	+ .06	79.3	+ 2.8	97	8	90	57	29	69	30	65	66	1.40	— 2.0	4	3,751	nw.	32	nw.	1	20	9	2	2.7	104	1874	51	1891
Lexington	980	11	29.03	30.05	+ .03	75.2	+ 2.3	94	22	85	54	37	66	26	64	72	3.37	— 0.8	6	5,974	s.	40	se.	23	9	11	11	5.5	99	1888	51	1890
Louisville	525	25	29.51	30.06	+ .05	77.7	+ 2.2	98	6	89	55	28	67	30	64	68	4.51	+ 1.0	7	4,566	nw.	37	nw.	22	20	8	3	2.7	105	1881	50	1891
Indianapolis	766	26	29.26	30.06	+ .03	74.7	+ 2.4	98	6	85	50	19	64	28	62	69	3.91	+ 0.6	8	3,602	nw.	33	w.	22	14	12	5	4.2	101	1881	46	1890
Cincinnati	628	26	29.41	30.06	+ .04	75.1	+ 0.6	96	6	84	55	27	66	26	62	68	3.70	— 0.9	8	4,281	s.	30	nw.	1	18	10	3	3.6	101	1881	51	1891
Columbus	824	19	29.20	30.06	+ .05	72.9	+ 1.4	94	9	83	51	•	63	32	63	77	3.53	+ 0.3	9	3,713	s.	24	nw.	10	5	19	7	5.5	98	1881	42	1887
Pittsburg	842	26	29.19	30.07	+ .03	73.5	+ 0.5	94	6	81	50	29	64	28	64	80	4.09	+ 0.9	12	3,419	w.	29	s.	4	11	12	8	4.6	100	1881	45	1890
Parkersburg	638	9	29.41	30.08	+ .03	73.6	+ 0.9	97	10	84	51	30	63	31	64	78	4.37	+ 0.4	11	2,939	s.	32	w.	23	11	10	10	5.4	97	1896	45	1890
Lower Lake Region.						70.2	+ 1.5										3.37	+ 0.4											
Buffalo	768	26	29.22	30.02	+ .03	68.6	+ 1.4	85	15	76	50	28	62	22	57	68	3.68	+ 0.5	14	3,080	w.	48	w.	23	2	19	10	6.2	94	1887	44	1880
Oswego	335	25	29.64	30.00	.00	69.4	+ 2.4	90	5	77	48	29	62	27	59	71	3.00	+ 0.4	12	6,203	s.	29	w.	6	14	9	8	4.3	98	1883	44	1884
Rochester	523	25	29.48	30.03	+ .03	69.7	+ 2.2	92	5	80	46	•	60	29	59	70	2.71	— 0.4	12	4,954	sw.	27	sw.	23	13	15	3	4.3	97	1893	43	1884
Erie	714	24	29.30	30.04	+ .04	69.8	+ 1.3	92	6	76	49	30	63	21	60	73	3.47	+ 0.2	13	6,820	sw.	33	sw.	10	9	20	2	5.0	94	1887	47	1887
Cleveland	740	26	29.27	30.04	+ .03	70.2	+ 1.7	93	•	78	47	29	62	27	63	78	3.10	0.0	11	7,863	se.	58	w.	10	12	11	8	4.7	99	1881	46	1890
Sandusky	629	20	29.37	30.03	+ .02	72.2	+ 1.7	95	9	81	51	27	64	27	61	72	2.71	— 0.4	7	5,263	sw.	40	nw.	6	11	10	10	5.2	98	•	48	•
Toledo	674	26	29.33	30.03	+ .03	71.2	+ 1.7	95	9	80	48	19	62	27	61	74	3.66	+ 1.0	10	5,995	sw.	35	nw.	22	15	11	5	4.3	97	1881	44	1888
Detroit	730	26	29.26	30.03	+ .02	70.3	+ 1.6	95	9	78	49	19	62	23	60	74	4.60	+ 1.9	15	5,911	sw.	37	nw.	11	11	15	5	4.7	99	1881	45	1875
Upper Lake Region.						67.8	+ 2.6										3.29	+ 0.4											
Alpena	609	24	29.35	30.00	+ .01	65.4	+ 2.9	93	5	74	40	28	56	33	57	78	6.78	+ 3.3	16	5,965	nw.	38	n.	8	13	13	5	4.8	93	•	39	•
Grand Haven	628	26	29.34	30.00	+ .01	68.7	+ 3.2	87	8	77	44	28	60	29	60	76	1.97	— 0.7	7	6,178	sw.	48	nw.	10	12	16	3	4.1	92	1881	42	1893
Marquette	734	26	29.16	29.93	— .04	64.6	+ 3.1	92	3	73	43	19	56	29	55	75	1.93	— 1.0	13	6,948	nw.	45	s.	25	11	11	9	5.1	98	1886	33	1885
Port Huron	639	23	29.36	30.03	+ .04	68.2	+ 2.2	90	6	77	47	28	60	25	60	79	4.74	+ 2.2	14	7,089	s.	52	n.	8	17	9	5	3.8	99	1891	41	1888
Sault Ste. Marie	634	9	29.29	29.95	— .04	63.2	+ 1.4	89	4	73	41	19	54	31	55	80	3.57	+ 0.8	11	5,452	nw.	42	nw.	30	13	12	6	4.6	90	1893	38	1890
Chicago	824	26	29.16	30.01	+ .02	72.8	+ 1.8	98	8	80	54	27	66	25	60	67	3.52	+ 0.6	6	10,489	s.	36	nw.	11	18	13	0	3.1	98	•	47	•
Milwaukee	678	26	29.31	30.01	+ .01	71.6	+ 3.5	98	5	80	51	27	63	27	61	74	1.77	— 1.0	9	6,534	sw.	52	w.	9	9	13	9	5.7	98	•	42	1875
Greenbay	617	10	29.34	29.99	— .02	69.9	+ 3.5	95	4	80	46	19	60	29	58	70	2.96	+ 0.1	11	5,567	s.	38	sw.	4	13	14	4	4.4	98	1891	40	1888
Duluth	702	26	29.19	29.93	— .03	65.4	+ 2.1	90	3	74	46	26	56	31	54	70	2.41	— 0.9	9	6,864	nw.	33	sw.	25	9	20	2	4.4	95	1888	40	1886
North Dakota.						66.0	+ 0.7										1.53	— 0.3											
Moorhead	935	16	28.96	29.95	+ .01	65.8	+ 1.3	94	3	79	34	31	52	46	50	64	2.26	— 0.4	9	6,351	s.	39	w.	3	18	9	4	3.4	100	1886	32	•
Bismarck	1,674	22	28.39	29.97	+ .05	67.2	— 0.7	98	2	82	40	26	53	47	48	57	1.77	— 0.2	10	6,624	n.	36	nw.	25	20	8	3	3.5	105	1876	32	1895
Williston	1,875	18	27.99	29.93	+ .03	64.9	— 2.6	94	•	79	38	26	51	48	47	58	0.72	— 0.4	6	6,309	nw.	40	nw.	25	17	10	4	3.3	107	1882	34	•
Upper Miss. Valley.						73.5	+ 2.0										2.21	— 0.2											
Minneapolis	.....	7	.....	.....	.....	71.1	+ 2.6	99	4	82	47	27	60	34	.....	.....	3.51	+ 0.1	9	.....	sw.	.....	.....	...	7	21	3	....	99	1896	42	1891
St. Paul	850	26	29.08	29.97	.00	70.0	+ 1.5	100	4	81	45	27	59	34	55	65	4.48	+ 1.2	10	4,845	nw.	60	nw.	4	13	14	4	4.4	100	1896	40	1891
La Crosse	.....	24	.....	.....	.....	70.2	+ 1.7	99	4	82	43	27	58	35	.....	.....	2.16	— 1.1	11	4,623	s.	24	sw.	25	15	11	5	4.1	101	1894	39	1891
Davenport	613	25	29.36	30.00	.00	73.1	+ 1.8	96	4	82	50	27	64	25	62	71	3.12	— 0.5	8	5,292	sw.	35	sw.	23	15	7	9	4.0	98	1894	44	1884
Des Moines	869	19	29.11	30.02	+ .04	72.7	+ 0.7	94	4	82	47	27	63	30	61	73	5.49	+ 2.2	12	5,018	s.	36	sw.	10	12	12	7	4.5	103	1881	40	1891
Dubuque	600	24	29.32	29.99	— .01	72.6	+ 2.3	99	4	83	48	27	62	30	60	70	2.05	— 1.1	11	2,941	sw.	28	nw.	15	9	13	9	5.2	99	•	41	1875
Keokuk	613	26	29.36	30.02	+ .03	75.0	+ 1.7	98	8	84	54	27	66	26	64	74	3.90	+ 1.1	7	4,504	s.	36	nw.	1	16	11	4	3.4	102	1873	47	1875
Cairo	359	26	29.06	30.03	+ .04	79.1	+ 2.6	97	15	88	59	27	70	23	67	72	1.78	— 1.1	4	4,639	s.	30	sw.	22	17	12	2	3.3	103	1881	52	1891
Springfield, Ill.	644	18	29.37	30.03	+ .01	75.0	+ 2.3	98	8	84	52	28	66	26	63	70	1.87	— 0.5	3	5,237	s.	22	nw.	26	14	15	2	3.6	100	1881	48	1891

TABLE I.—*Climatological data for Weather Bureau Stations, August, 1896*—Continued.

Stations.	Elevation above sea-level, feet.	Length of record, years	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.									Humidity and precipitation.					Wind.					Clear days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Monthly temperature data since opening station.			
			Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					Absolute maximum.	Year	Absolute minimum	Year.
Up. Miss. Val.—Con																															
Hannibal	534	....	29.47	30.02	.....	75.5	.....	100	8	86	49	28	66	36	64	71	1.58	— 0.8	5	5,332	sw.	34	nw.	15	16	13	2	3.1	....	....	.....	....
St. Louis	571	26	29.46	30.05	+ .06	79.4	+ 3.1	100	8	89	60	24	70	26	66	69	2.12	— 1.4	7	6,585	s.	45	w.	16	20	11	0	3.1	106	1881	52	1887
Missouri Valley.						75.0	+ 2.1										2.52	— 0.9													
Columbia	.....	7	.....	.....	.....	77.6	+ 3.1	104	7	90	49	27	65	40	.....	.....	1.85	— 1.0	6	4,902	s.	31	nw.	14	13	12	6	4.3	105	1894	42	1891
Kansas City	963	9	29.03	30.02	+ .03	77.4	+ 2.7	103	8	88	58	18	67	32	64	68	3.33	— 0.5	6	5,441	s.	29	se.	11	17	8	6	3.2	103	1896	46	1891
Springfield, Mo	1,324	10	28.68	30.03	+ .04	77.4	+ 2.1	100	7	87	57	27	68	29	63	68	3.04	— 1.0	7	6,032	se.	36	s.	8	12	17	2	3.8	97	*	44	1891
Topeka	.....	10	.....	.....	.....	78.1	+ 4.4	105	8	90	56	27	67	32	.....	.....	5.60	+ 0.4	6	.....	s.	.....	.....	...	15	11	5	....	105	1896	40	1891
Omaha	1,123	26	28.85	30.01	+ .02	73.9	+ 1.4	96	*	83	54	27	64	28	62	70	3.50	+ 0.2	11	5,643	se.	54	ne.	15	11	12	8	4.8	105	1874	44	*
Sioux City	1,165	8	.....	.....	.....	71.8	+ 0.2	98	3	83	41	27	61	39	.....	.....	0.86	— 2.9	7	6,762	s.	42	n.	14	14	9	8	4.3	102	1894	40	1891
Pierre	1,470	22	28.41	29.92	— .02	73.6	+ 1.8	103	28	87	46	26	60	42	52	55	0.85	— 0.8	5	6,861	se.	44	e.	13	18	9	4	3.5	108	1873	39	1898
Huron	1,310	16	28.59	29.95	.00	70.2	+ 1.2	101	7	84	40	27	56	47	55	63	1.17	— 1.4	6	8,605	se.	38	s.	2	14	13	4	4.1	102	1890	33	1886
Northern Slope.						67.8	— 0.4										1.01	— 0.3													
Havre	2,477	17	27.38	29.91	.00	65.6	— 0.7	92	19	80	38	11	51	44	43	52	0.65	— 0.7	5	6,484	sw.	42	w.	1	15	15	1	3.5	103	1893	34	*
Miles City	2,372	19	27.47	29.88	— .02	69.7	— 2.0	98	1	85	42	26	54	48	46	48	0.33	— 0.7	3	5,377	nw.	34	nw.	4	20	4	7	3.5	109	1882	37	1882
Helena	4,108	17	25.91	30.01	+ .11	65.2	— 1.0	92	29	78	42	22	53	34	39	45	0.86	+ 0.2	8	5,174	sw.	45	sw.	31	17	9	5	3.6	98	1893	34	1880
Rapid City	3,260	11	26.65	29.91	.00	70.6	— 0.4	100	2	85	47	24	56	45	45	45	0.13	— 1.2	5	7,261	w.	48	sw.	3	15	11	5	4.0	104	1881	42	*
Cheyenne	6,105	26	24.15	29.94	+ .03	66.2	+ 1.2	90	2	80	40	23	52	38	44	53	2.52	+ 1.0	9	6,467	w.	36	s.	5	11	13	7	5.0	96	1882	30	1892
Lander	5,372	10	24.75	30.00	+ .06	64.8	— 2.3	89	14	81	39	5	49	43	40	51	0.49	— 0.3	9	3,215	sw.	40	sw.	3	16	9	6	4.0	100	1882	33	*
North Platte	2,826	22	27.13	29.98	+ .03	72.3	+ 1.3	100	3	85	44	23	60	41	57	67	2.07	— 0.4	8	6,358	se.	44	se.	7	12	16	3	4.5	103	1878	40	1893
Middle Slope.						77.7	+ 3.1										1.43	— 1.2													
Denver	5,290	25	24.86	29.96	+ .07	71.8	— 2.3	94	2	86	43	23	58	41	43	45	0.97	— 0.5	7	5,072	s.	39	sw.	13	11	16	4	4.4	105	1878	43	1896
Pueblo	4,713	9	25.36	29.94	+ .02	74.2	+ 1.9	102	15	89	52	*	60	43	44	45	1.98	— 0.1	5	4,767	nw.	48	n.	11	12	15	4	4.8	102	1896	45	1892
Concordia	1,410	12	28.54	29.97	— .01	76.2	+ 2.5	103	15	87	54	24	66	35	62	69	3.09	+ 0.2	12	4,630	s.	23	s.	4	13	12	6	4.3	103	1896	41	1891
Dodge City	2,504	22	27.42	29.92	— .01	79.4	+ 4.1	102	20	93	52	23	65	38	57	56	0.73	— 2.1	3	8,185	se.	32	s.	28	23	7	1	3.0	104	1888	46	1891
Wichita	1,351	9	28.58	29.96	+ .02	81.6	+ 3.8	106	20	94	56	24	69	38	60	56	0.31	— 3.3	5	6,039	s.	28	n.	25	21	4	6	3.1	106	1896	45	1893
Oklahoma	1,239	6	28.74	30.00	+ .05	83.2	+ 3.8	104	1	96	53	24	70	37	61	53	1.83	— 1.3	4	5,764	s.	42	nw.	2	27	4	0	2.0	104	1896	49	1891
Southern Slope.						.....	.....										1.08	— 1.7													
Abilene	1,749	11	28.24	30.00	+ .03	84.0	+ 3.3	101	7	95	61	23	73	29	58	51	1.54	— 1.1	3	6,613	s.	25	nw.	22	15	11	5	4.3	103	1888	55	*
Amarillo	3,691	5	26.34	29.97	+ .01	77.0	.....	96	21	89	52	23	65	31	52	51	0.63	— 2.3	4	11,153	s.	46	s.	5	14	11	6	4.4	97	1892	52	1896
Southern Plateau.						81.6	— 0.1										1.16	— 0.2													
El Paso	3,767	19	26.24	29.93	+ .04	79.6	— 0.9	97	31	92	61	23	68	30	52	46	1.09	— 0.7	5	6,988	e.	48	ne.	25	16	11	4	3.6	110	1884	52	1880
Santa Fe	6,998	23	23.44	30.00	+ .03	68.0	+ 1.5	88	10	79	49	23	57	32	42	47	1.47	— 1.1	14	4,591	se.	32	ne.	11	13	12	6	4.8	97	1878	40	1888
Phœnix	1,106	....	28.75	29.87	.....	88.6	+ 0.6	108	13	101	69	16	76	31	62	49	1.77	+ 0.8	8	3,453	w.	40	ne.	16	15	10	6	4.0	....	....	.....	....
Yuma	139	21	29.69	29.83	+ .05	90.9	— 1.6	113	13	104	71	6	76	36	65	51	0.32	0.0	7	4,796	sw.	40	sw.	16	23	6	2	2.1	115	1879	60	1887
Middle Plateau.						69.4	— 1.2										1.16	+ 0.9													
Carson City	4,730	9	25.35	30.00	.....	65.6	— 1.8	92	11	83	39	4	48	46	41	52	1.30	+ 1.2	4	.....	w.	.....	.....	...	19	7	5	3.3	95	1895	34	1895
Winnemucca	4,340	18	25.69	29.93	+ .07	69.0	— 0.7	94	11	86	44	*	52	43	25	25	0.70	— 0.6	5	5,983	sw.	50	w.	30	20	7	4	2.5	102	1882	29	1887
Salt Lake City	4,344	23	25.68	29.93	+ .05	73.7	— 1.2	96	13	86	55	5	62	32	47	43	1.47	+ 0.8	8	4,185	se.	26	se.	27	17	5	9	4.6	101	1875	44	1880
Northern Plateau.						69.2	0.0										1.04	+ 0.3													
Baker City	3,479	8	26.47	29.90	.00	66.8	+ 0.5	93	16	81	41	4	52	39	53	67	0.36	— 0.2	5	3,739	s.	28	w.	27	13	9	9	4.6	99	1893	36	1890
Idaho Falls	4,742	7	25.30	29.94	+ .04	67.0	— 0.6	94	13	85	40	11	49	48	41	50	1.08	— 0.6	6	5,485	s.	40	s.	3	16	9	6	3.7	101	1881	33	1893
Spokane	1,930	16	27.98	29.96	+ .05	68.6	+ 0.3	92	*	82	46	11	55	41	40	45	1.48	+ 1.2	4	3,109	ne.	24	s.	8	17	7	7	3.7	102	1888	38	*
Walla Walla	1,018	11	28.89	29.94	+ .02	74.2	— 0.2	96	13	87	53	*	61	39	49	45	1.24	+ 1.1	6	3,768	s.	24	w.	1	18	11	2	3.5	108	1894	44	1887
N. Pac. Coast Reg.						62.2	+ 1.2										1.38	+ 0.4													
Fort Canby	179	13	29.86	30.05	+ .01	60.6	+ 1.7	89	22	66	51	12	56	33	56	89	1.22	+ 0.2	9	6,924	s.	36	s.	1	3	7	21	7.5	90	1884	48	*
Port Angeles	29	12	.....	.....	.....	58.2	+ 1.4	77	23	64	45	11	52	28	.....	.....	0.47	— 0.2	6	3,841	w.	20	w.	3	18	8	5	3.3	88	1895	37	1895
Seattle	119	....	29.90	30.03	.....	63.9	.....	89	22	72	53	20	56	33	54	74	0.50	.....	5	2,465	s.	18	nw.	10	10	9	12	5.2	....	....	.....	....
Tatoosh Island	86	12	29.96	30.06	+ .02	57.4	+ 1.4	72	23	62	48	21	53	20	53	87	2.48	+ 0.1	11	4,661	w.	29	e.	22	5	3	23	7.6	80	1894	40	1890
Astoria	.....	12	.....	.....	.....	63.6	+ 2.0	85	22	70	56	25	58	27	.....	.....	1.81	+ 0.6	10	.....	w.	.....	.....	...	5	7	19	....	88	1894	45	1895
Portland, Oreg	157	25	29.86	30.03	+ .01	66.3	+ 0.3	91	22	75	55	26	58	29	55	71	1.32	+ 0.8	7	4,962	nw.	25	n.	22	10	14	7	4.6	97	1891	43	1876
Roseburg	523	19	29.44	29.99	— .03	67.2	+ 0.4	95	22	80	49	28	55	39	52	65	0.99	+ 0.8	3	2,757	nw.	14	nw.	29	15	7	9	4.2	104	1894	40	1882
Mid. Pac. C'st Reg.						65.2	+ 0.2										0.31	+ 0.2													
Eureka	64	10	30.00	30.06	+ .04	59.9	+ 4.0	72	31	65	51	17	55	17	55	88	0.70	+ 0.6	5	4,350	nw.	30	nw.	3	1	22	8	6.4	79	1894	45	1895
Redbluff	334	20	29.57	29.91	+ .06	78.8	— 2.2	100	10	93	59	7	65	36	46	37	0.54	+ 0.5	1	2,995	se.	17	se.	5	20	10	1	2.2	114	1891	52	1881
Sacramento	71	20	29.86	29.93	+ .06	72.0	— 1.6	95	9	87	54	16	58	38	55	62	0.20	+ 0.2	1	6,487	sw.	28	sw.	5	19	10	2	3.2	108	*	48	1887
San Francisco	153	26	29.85	30.01	+ .07	59.5	— 0.8	72	18	65	52	22	54	18	54	87	0.09	+ 0.1	3	10,364	w.	36	w.	20	13	12	6	4.5	92	*	47	1893
Point Reyes Light	.....	8	.....	.....	.....	56.0	+ 1.4	69	29	60	49	*	52	17	.....	.....	0.02	— 0.2	1	.....	nw.	....	.....	...	5	14	12	....	84	1894	41	*
S. Pac. Coast Reg.						73.5	— 1.0										0.10	0.0													
Fresno	332	9	29.55	29.89	+ .05	79.8	— 1.4	102	25	96	57	29	64	39	48	40	0.15	+ 0.1	1	4,889	nw.	20	nw.	5	23	6	2	1.7	112	*	51	1895
Los Angeles	330	20	29.61	29.96	+ .05	71.2	— 1.3	91	30	82	54	8	60	29	60	77	0.01	0.0	1	2,646	w.	15	w.	29	8	21	2	3.5	106	1885	50	1883
San Diego	69	25	29.92	30.00	+ .06	69.4	— 0.3	88	29	75	59	8	64	21	62	79	0.13	0.0	2	3,672	nw.	16	nw.	19	25	5	1	1.8	92	1884	54	*
San Luis Obispo	201	....	29.79	30.01	.....	66.5	.....	90	1	80	48	27	53	36	53	71	0.20	.....	1	2,906	nw.	14	w.	6	12	16	3	4.0	....	....	.....	....

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record. * Two or more directions, dates, or years.

TABLE II.—*Meteorological record of voluntary and other cooperating observers, August, 1896.*

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Alabama.	°	°	°	*Ins.*	*Ins.*
Alco†	96	65	81.4	5.30	
Ashville*†[1]	102	62	83.5	1.20	
Bermuda†	96	65	81.2	3.44	
Birmingham†	101	65	83.0	2.26	
Brewton†	98	64	81.4	1.85	
Carrollton*†[1]	94	63	81.4	4.82	
Citronelle†	95	70	82.4	5.27	
Cianton†	97	66	81.8	1.60	
Cordova†	.....	.....	.....	3.56	
Daphne†	97	66	82.2	9.22	
Decatur†	101	54	80.5	1.30	
Demopolis†	.....	.....	.....	0.60	
Elba†	100	61	83.2	1.59	
Eufaula *a*†	99	70	85.4	1.86	
Evergreen†	100	63	82.0	3.41	
Florence *a*†	.....	.....	.....	3.49	
Florence *b*†	100	54	80.6	2.65	
Fort Deposit †	102	62	84.4	2.16	
Goodwater†	104	63	83.6	0.69	
Greensboro†	99	64	82.5	2.35	
Hamilton †	98	66	81.0	0.28	
Healing Springs†	101	61	81.0	2.42	
Highland Home †	96	68	82.5	0.84	
Jasper† [b]	100	60	82.0	3.80	
Livingston†	101	62	84.1	1.30	
Lock No. 4	.....	.....	.....	1.90	
Madison Station†	100	55	80.2	0.59	
Marion†	100	65	83.1	3.34	
Mount Willing†	100	65	82.2	2.55	
Newbern†	97	68	83.8	1.06	
Newburg† [c]	104	50	80.6	3.21	
Newton†	97	64	82.3	2.29	
Oneonta† [f]	101	58	80.7	2.81	
Opelika†	96	66	81.2	1.39	
Oxanna†	98	60	81.0	0.98	
Pineapple†	104	62	83.6	2.98	
Pushmataha†	102	65	84.0	1.86	
Rockmills†	96	62	80.0	0.70	
Scottsboro†	100	58	81.8	0.40	
Selma †	.....	.....	.....	2.10	
Thomasville†	106	70	84.7	4.28	
Tuscaloosa†	103	59	84.0	1.20	
Tuscumbia†	100	54	82.0	1.81	
Union†	104	60	83.7	0.06	
Union Springs†	102	66	83.5	2.82	
Uniontown†	98	67	84.4	2.50	
Valleyhead†	97	59	79.8	2.06	
Wetumpka	.....	.....	.....	4.51	
Wilsonville†	.....	.....	.....	2.78	
Arizona.					
Arizona Canal Co. Dam	110	66	88.8	2.13	
Benson*§	98	69	83.6	0.60	
Bisbee†	92	62	74.6	3.10	
Buckeye†	111	70	88.4	0.60	
Calabasas†	98	57	75.4	2.57	
Casa Grande*§	108	77	90.9	0.88	
Dragoon†	.....	.....	.....	0.75	
Dragoon Summit*§	92	67	78.4	0.87	
Dudleyville †	102	63	80.5	2.66	
Eagle Pass*§	94	64	76.2	3.21	
Farleys Camp†	108	65	86.0	2.60	
Flagstaff†	86	41	66.2	.....	
Fort Apache	95	41	70.6	4.36	
Fort Grant †	95	57	76.6	2.68	
Fort Huachuca †	91	47	72.6	6.05	
Gilabend *a*§	112	79	94.1	2.58	
Glendale	108	70	86.9	.....	
Holbrook†	95	51	73.7	0.63	
Ingleside	112	70	89.5	0.07	
Lochiel†	.....	.....	.....	2.93	
Maricopa*§	118	82	80.5	0.27	
Mesa†	110	61	85.0	0.25	
Mount Huachuca †	90	59	73.4	2.07	
Natural Bridge†	.....	.....	.....	4.40	
Oracle†	97	61	77.4	3.95	
Oro	.....	.....	.....	2.21	
Oro Blanco	95[b]	66[b]	79.2[b]	5.82	
Pantano*§	98	67	79.4	2.80	
Parker†	120[f]	67[f]	91.5[f]	1.02	
Payson	.....	.....	.....	2.16	
Peoria†	106	73	88.8	1.80	
Phœnix	104	67	86.2	1.05	
Pinal Ranch	.....	.....	.....	2.90	
Reymert †	114	65	90.0	1.58	
St. Helena Ranch †	95	61	76.8	5.10	
San Carlos †	108	62	84.4	0.88	
San Simon*§	102	69	85.7	0.45	
Showlow	.....	.....	.....	2.11	
Signal†	111	69	88.4	0.83	
Sulphur Spring Valley†	.....	.....	.....	1.85	
Texas Hill*§	112	60	87.9	1.20	
Tucson *c*†	104	69	84.0	1.25	
Walnut Grove †	.....	.....	.....	0.06	
Walnut Ranch*†[1]	90	59	72.0	1.54	
Whipple Barracks†	94	48	70.6	2.61	
Willcox*§	95	67	80.0	1.77	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Arkansas.	°	°	°	*Ins.*	*Ins.*
Arkansas City†	.....	.....	.....	2.15	
Beebranch†*	107	54	83.4	1.95	
Blanchard Springs†	105	52	83.8	0.83	
Brinkley†	105	54	82.2	2.75	
Camden *a*†	.....	.....	.....	0.74	
Camden *b*†	109	48	82.8	0.84	
Canton*§	105	52	81.4	.....	
Conway*§	102	61	82.2	2.08	
Corning†	101	50	78.6	3.38	
Dallas†*	106	51	83.6	1.52	
Dardanelle †	.....	.....	.....	1.00	
Elon†	106	53	84.0	2.66	
Fayetteville†	107	53	81.4	4.82	
Forrest†	105	56	82.7	2.01	
Fulton†	.....	.....	.....	0.50	
Gaines Landing†	.....	.....	.....	1.16	
Helena *a*†	.....	.....	.....	1.61	
Helena *b*†	109	60	84.0	1.11	
Hot Springs *a*	108	62	85.0	1.73	
Hot Springs *b*	.....	.....	.....	1.63	
Hot Springs (near)	.....	.....	.....	3.51	
Jonesboro†	104	54	80.8	1.32	
Keesees Ferry†	109	48	79.4	3.42	
Kirby†	105	60[e]	84.6[d]	4.85	
Lacrosse†	107	51	79.5	1.30	
Latour	.....	.....	.....	2.23	
Lonoke*[1]	106	61	83.9	4.12	
Luna Landing*§	101	63	82.9	1.18	
Malvern†	112	52	83.0	3.16	
Marvell	105	60	84.2	5.75	
Mossville	100	60	81.8	3.41	
Mount Nebo†	94	60	79.6	0.92	
New Gascony*[1]	103	62	83.4	4.74	
Newport *a*†	.....	.....	.....	1.29	
Newport *b*†	105	50	81.0	1.19	
Newport *c*†	106	49	81.2	0.65	
Osceola†	100	57	80.4	1.68	
Ozark†	109	62	86.0	1.67	
Picayune†	106	.....	.....	2.01	
Pinebluff†	108	58	84.5	3.12	
Pocahontas†	102	54	79.0	3.42	
Prescott†	111	60	86.4	1.43	
Rison†	109	54	82.4	4.25	
Russellville†	106	53	82.3	4.36	
Silver Springs†	104	49	78.6	2.10	
Stuttgart†	105	51	82.6	2.43	
Texarkana†	108	66	86.0	2.42	
Warren†	108	55	83.1	3.77	
Washington †	107	.....	.....	0.90	
Wiggs*[1]	110	57	85.5	2.71	
Witts Springs†	104[d]	52[d]	79.9[d]	2.13	
California.					
Adin	93	41	66.7	0.00	
Agnew	88	35	56.4	0.67	
Arlington Heights	99	52	73.8	0.02	
Athlone*§	102	65	82.2	0.40	
Azusa	.....	.....	.....	1.10	
Ballast Point L. H.	.....	.....	.....	0.10	
Barstow†	108	45	74.2	0.87	
Bear Valley†	.....	.....	.....	0.68	
Berkeley	78	54	64.1	0.90	
Bishop†	97	45	70.1	0.36	
Bishop Creek*§	100	64	81.4	0.06	
Boca*§	87	38	57.7	0.18	
Bodie†	82	26	55.4	1.88	
Bowmans Dam†	.....	.....	.....	1.00	
Caliente*§	100	67	83.4	0.29	
Calloway Canal†	.....	.....	.....	0.00	
Cape Mendocino L. H.	.....	.....	.....	0.77	
Cedarville†	90	41	67.8	0.59	
Centerville*[1]	94	60	67.0	0.83	
Chico*§	104	58	78.6	0.41	
Chino*†§	94	59	75.6	0.00	
Cisco*§	78	45	60.5	.....	
Claremont†	94	47	72.3	0.40	
Corning*§	101	60	83.2	0.42	
Coronado	87	63	71.8	0.13	
Craftonville	106	55	80.4	0.62	
Crescent City†	70	45	59.6	1.10	
Crescent City L. H.	.....	.....	.....	1.09	
Davisville *b*	99	53	74.8	0.47	
Delano*§	100	65	81.1	0.00	
Delta*§	102	63	76.5	T.	
Descanso*[5]	92	37	68.6	1.38	
Drytown	96	47	72.4	T.	
Dunnigan*§	98	56	75.0	0.37	
Durham*[1]	92	55	73.6	0.42	
East Brother L. H.	.....	.....	.....	0.05	
Edgwood*§	91	53	69.8	0.77	
Edmanton*†[1]	88	42	61.3	0.22	
Escondido	102	46	74.0	.....	
Fallbrook*[1]	97	57	70.8	0.05	
Folsom City *b*[1]	99	64	76.7	0.64	
Fordyce Dam †	.....	.....	.....	0.66	
Fort Bragg†	.....	.....	.....	0.19	
Fort Ross	.....	.....	.....	0.20	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
Georgetown†	92	49	72.4	0.10	
Glendora	.....	.....	.....	0.00	
Goshen*§	102	56	77.1	0.03	
Grass Valley	.....	.....	.....	0.13	
Greenville†	95	33	64.2	0.23	
Guinda	.....	.....	.....	0.19	
Healdsburg*[1]	90	48	64.3	0.08	
Hollister	88	40	61.4	1.10	
Hueneme	.....	.....	.....	0.12	
Humboldt L. H.	.....	.....	.....	0.70	
Hydesville †	78	49	61.0	0.23	
Indio*§	110	73	90.1	0.00	
Iowa Hill*[1]	93	59	72.0	0.06	
Isabella	109	54	79.8	0.01	
Jackson	87	47	70.0	0.18	
Jolon	.....	.....	.....	0.08	
Keeler*§	110	68	85.4	1.42	
Keene*§	95	60	75.5	0.40	
Kennedy Gold Mine	94	49	73.6	T.	
Kernville	.....	.....	.....	0.05	
King City*§	100	52	66.4	T.	
Kingsburg*§	100	60	80.7	0.06	
Kono Tayee	92	57	73.6	0.27	
Lagrange*§	104	58	80.6	0.33	
Laporte*†[1]	82	45	59.8	0.25	
Lemoore *a*§	103	63	81.0	T.	
Lick Observatory†	84	44	67.8	0.28	
Lime Kiln	105	57	81.6	.....	
Lime Point L. H.	..	.....	.....	0.10	
Lodi	94	51	71.6	0.17	
Los Alamos†	.....	.....	.....	0.00	
Los Gatos *b*	87	46	64.8	0.77	
McMullin*[1]	104	60	83.5	.....	
Malakoff Mine*[1]	89	55	70.1	0.15	
Mammoth Tank*§	116	73	97.4	0.01	
Manzana	101	53	76.0	1.04	
Mare Island L. H.	.....	.....	.....	0.48	
Merced*§	102	60	79.0	0.53	
Middletown*†[1]	98	50	71.4	0.10	
Mills College	.....	.....	.....	0.95	
Milton (near)*[1]	96	62	76.4	0.01	
Modesto*§	100	60	78.4	T.	
Mohave*§	107	65	83.7	0.00	
Mokelumne Hill*§	..	62	73.2	0.22	
Monterey*§	80	52	63.0	0.50	
Mountain Home	.....	.....	.....	1.00	
Mount Glenwood*[1]	99	63	78.9	0.50	
Mt. Lowe Observatory	.....	.....	.....	0.10	
Mutah Flat†	.....	.....	.....	0.00	
Napa *b*	94	47	68.8	0.46	
Nevada City†	86	45	66.9	0.05	
Newcastle *a*†	94	52	74.4	0.31	
Newhall*§	105	58	77.1	0.25	
Nordhoff †	103	42	73.0	T.	
Oakland *a*	80	53	63.2	0.68	
Ogilby*§	117	84	98.3	0.00	
Oleta*[1]	92	55	70.8	0.24	
Orangevale†	98	57	75.7	0.39	
Orland*§	104	60	83.9	0.37	
Oroville *b*	100	62	80.2	0.23	
Palermo†	101	52	76.4	0.22	
Paso Robles *b*	100	56	76.0	1.19	
Peachland*[1]	81	50	63.0	0.08	
Picachot	111	78	94.9	0.10	
Piedras Blancas L. H.	.....	.....	.....	0.05	
Pigeon Point L. H.	.....	.....	.....	0.02	
Pilot Creek	.....	.....	.....	0.42	
Placerville	90	43	68.8	0.15	
Point Ano Nuevo L. H.	.....	.....	.....	0.26	
Point Arena L. H	.....	.....	.....	0.00	
Point Bonita L. H.	.....	.....	.....	0.43	
Point Conception L. H.	.....	.....	.....	0.00	
Point Fermin L. H	.....	.....	.....	0.00	
Point George L. H.	.....	.....	.....	0.66	
Point Hueneme L. H.	.....	.....	.....	0.14	
Point Lobos	67	52	57.4	0.26	
Point Loma L. H.	.....	.....	.....	0.08	
Point Montara L. H.	.....	.....	.....	0.43	
Point Pinos L. H.	.....	.....	.....	0.77	
Point Reyes L. H.	.....	.....	.....	0.02	
Point Sur L. H	.....	.....	.....	0.42	
Pomona (near)	97	51	73.9	0.00	
Poway*§	92	61	68.8	0.08	
Quincy†	89	37	63.9	0.20	
Ravenna*§	112	60	77.5	0.42	
Redding *b*†	100	58	77.9	0.38	
Reedley (near)*[1]	100	69	84.9	0.09	
Represa	92	54	73.4	0.55	
Riovista	96	56	73.8	0.21	
Roe Island L. H.	.....	.....	.....	1.20	
Roseville (near)*[5]	98	52	75.3	0.64	
Rosewood	101	51	75.2	0.16	
Sacramento *a*	94	52	72.6	0.19	
Salinas*§	76	53	63.4	0.36	
Salton*§	120	80	98.2	0.51	
San Bernardino†	100	50	75.2	0.17	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
California—Cont'd.	°	°	°	*Ins.*	*Ins.*
San Jacinto †	104	48	76.4	T.	
San Jose *b*	86	43	63.6	0.74	
San Leandro *[1]	84	60	65.3	1.34	
San Luis L. H.	.....	.....	.....	0.13	
San Mateo *[2]	82	60	67.2	0.46	
San Miguel *[3]	97	56	73.7	0.68	
San Miguel Island †	80	54	61.8	0.10	
Santa Ana *[3]	95	68	79.2	0.00	
Santa Barbara *a*	86	56	67.5	0.00	
Santa Barbara L. H.	.....	.....	.....	0.00	
Santa Clara *a* *[6]	82	48	64.5	0.69	
Santa Cruz *b* †	91	45	64.8	0.73	
Santa Cruz L. H.	.....	.....	.....	0.74	
Santa Maria	85[a]	50[a]	65.6[a]	0.03	
Santa Monica *[3]	95	63	75.0	0.31	
Santa Paula *b* †	88	48	66.5	0.10	
Santa Rosa *[3]	97	54	68.8	0.00	
Shasta	.....	.....	.....	0.43	
Shasta Springs †	88	42	64.4	0.50	
Sneddens Ranch †	.....	.....	.....	T.	
S. E. Farallone L. H	.....	.....	.....	0.25	
Stanford University	86	48	64.6	1.10	
Stockton *a*	92	54	71.2	0.19	
Summerdale †	86	49	66.4	1.38	
Susanville †	92	50	72.0	0.20	
Sutter Creek *[3]	92	45	69.0	T.	
Tecarte Dam *[4]	104	44	68.2	0.32	
Tehama *[3]	103	67	82.6	0.47	
Templeton *[3]	104	52	70.8	0.80	
Trinidad L. H.	.....	.....	.....	1.36	
Truckee *[3]	88	42	63.6	0.34	
Tulare *b*	.....	.....	.....	0.03	
Tulare *c*	110	54	82.2	0.06	
Turlock *b* †	102	47	75.8	T.	
Ukiah †	92	47	68.8	0.04	
Upper Lake	98	48	72.2	0.87	
Upper Mattole *[1]	89	51	65.6	0.65	
Vacaville *a* *[1]	98	60	74.2	0.37	
Ventura †	88	44	63.3	T.	
Volcano Springs *[3]	125	80	99.6	T.	
Walnutcreek	98	58	74.4	1.05	
Washington *[1] *d*	92	52	63.6	0.38	
West Palmdale	.....	.....	.....	1.35	
Westpoint †	.....	.....	.....	0.34	
Wheatland †	97	52	74.2	0.28	
Williams *[3]	99	59	75.2	1.10	
Willows *b* *[3]	99	62	81.7	0.62	
Wilmington *[3]	86	60	71.1	0.00	
Wire Bridge *[3]	97	56	77.4	0.18	
Yerba Buena L. H	.....	.....	.....	0.02	
Yreka †	97	42	69.5	1.01	
Yuba City *[3]	91	65	78.5	0.30	
Engineers Quarters ‡	.....	.....	.....	0.10	
Morses House ‡	.....	.....	.....	0.46	
Deep Creek ‡	.....	.....	.....	0.78	
Holcomb Creek ‡	.....	.....	.....	0.47	
Squirrel Inn ‡	.....	.....	.....	0.38	
Colorado.					
Alma †	78	30	51.6	1.67	
Antlers †	96	44	71.4	0.32	
Boxelder	.....	.....	.....	3.05	
Breckenridge †	77	27	55.6	2.29	
Brush [1]	101	40	71.1	.....	
Byers *[1]	96	36	60.2	.....	
Cameron Pass	70	26	50.4	.....	
Canyon †	101	46	72.8	2.91	
Capps †	.....	.....	.....	0.18	
Castlerock †	90	37	65.8	3.57	
Collbran	.....	.....	.....	1.35	
Colorado Springs †	91	44	67.0	2.43	
Cope †	100	44	74.8	1.10	
Craig	.....	.....	.....	1.00	
Crook	101	43	73.6	1.57	
Deertrail *[5]	93	47	73.2	.....	
Delta †	.....	.....	.....	0.79	
Downing †	98	45	72.4	1.15	
Dumont *† [5]	88	34	64.4	2.81	
Durango †	90	44	67.6	1.76	
First View *[6]	98	.....	74.2	3.90	
Fleming	.....	.....	.....	0.83	
Fort Collins †	94	40	69.0	2.20	
Fox	.....	.....	.....	2.55	
Garnett	.....	.....	.....	0.90	
Gleneyrie †	85	41	65.1	2.27	
Goldhill *[1]	89	38	62.6	2.98	
Grand Junction †	96	53	75.2	1.01	
Greeley †	93	41	69.6	2.15	
Gulch †	88	38	64.0	1.32	
Gunnison †	89	29	60.4	0.92	
Holly	.....	.....	.....	0.83	
Holyoke *a*	.....	.....	.....	1.16	
Holyoke *b*	.....	.....	.....	0.95	
Hugo *[5]	98	49	72.7	2.25	
Hugo (near) †	90[f]	39	67.0[e]	2.80	
Husted †	96	42	67.9	3.08	
Kit Carson *[1]	102	54	75.6	.....	
Colorado—Cont'd.	°	°	°	*Ins.*	*Ins.*
La Jara †	91	31	62.3	0.53	
Lake Moraine †	74	38	54.6	2.60	
Lamar †	107	47	79.4	0.48	
Laporte	.....	.....	.....	1.40	
Las Animas †	103	47	76.4	0.30	
Lay †	98	37	69.2	1.26	
Leadville (near) *† [1]	80	36	52.8	0.85	
Leroy †	98	46	73.2	0.87	
Longmont †	100	41	71.6	1.98	
Mecker †	94	36	65.6	1.35	
Millbrook †	89	33	60.5	1.72	
Minneapolis †	105	46	78.4	0.89	
Montrose †	100	43	71.0	0.37	
Moraine †	82	29	59.0	2.50	
Pagoda †	95	32	65.4	1.05	
Paonia †	.....	.....	.....	0.47	
Parachute †	94	49	70.3	1.27	
Pinkbamton *[3]	86	30	58.6	2.28	
Redcliff	.....	.....	.....	1.63	
Rico †	79	36	56.6	2.32	
Rockyford †	100	49	75.2	0.47	
Saguache †	82	45	63.8	0.27	
St. Cloud †	.....	.....	.....	3.73	
San Luis †	98	36	64.8	1.05	
Santa Clara)	85	42	60.6	1.49	
Seibert †	.....	.....	.....	1.91	
Sherwood Ranch	80	29	59.8	.....	
Smoky Hill Mine †	89	34	63.4	4.45	
Springfield †	.....	.....	.....	1.73	
Stamford *[1]	78	34	52.2	2.20	
Sulphur Springs †	85	31	59.4	1.97	
Surface Creek †	96	38	69.0	0.93	
Thon †	100	40	70.0	4.96	
T. S. Ranch †	92	48	71.0	0.45	
Twin Lakes	.....	.....	.....	1.05	
Vilas	.....	.....	.....	0.62	
Wallet †	.....	.....	.....	1.48	
Watkins *[1]	88	64	71.4	.....	
Wray †	101	43	74.4	1.47	
Yuma	.....	.....	.....	1.04	
Connecticut.					
Bridgeport	95	51	72.3	2.19	
Canton †	92	43	68.0	4.12	
Colchester	93	46	69.5	4.05	
Falls Village	.....	.....	.....	4.25	
Greenfield Hill	.....	.....	.....	3.04	
Hartford *b*	.....	.....	.....	4.84	
Hartford *c*	92	50	71.2	.....	
Lake Kononoc	.....	.....	.....	3.49	
Middletown	96	45	71.6	2.59	
New London †	90	51	70.4	3.60	
North Grosvenor Dale	92	43	67.7	2.47	
Norwalk	92	47	70.9	2.53	
Southington *[1]	93	47	69.6	3.20	
South Manchester	.....	.....	.....	3.54	
Storrs	91	44	68.6	2.71	
Voluntown †	91[f]	42[f]	67.0[f]	2.77	
Wallingford †	.....	.....	.....	3.49	
Waterbury	93	46	70.0	2.67	
West Cornwall †	87	47	67.3	4.68	
West Simsbury	.....	.....	.....	3.02	
Windsor	91	46	70.1	3.53	
Delaware.					
Dover †	94	54	74.8	0.68	
Milford	99	53	77.0	2.10	
Millsboro	98	49	74.9	1.86	
Newark	98	50	74.8	1.14	
Seaford †	97	55	75.0	3.17	
Wilmington †	103	51	77.8	0.47	
District of Columbia.					
West Washington	98	49	75.6	2.71	
Florida.					
Amelia †	94	66	80.3	5.03	
Archer †	97	59	82.3	6.72	
Bartow †	95	67	82.6	4.49	
Brooksville †	93	64	81.0	7.30	
Carrabelle †	96	70	83.6	.....	
Clermont †	99	69	83.6	4.29	
Earnestville †	99	65	83.0	10.20	
Emerson †	99	58	82.9	8.23	
Eustis †	97	63	83.2	6.78	
Federal Point †	96	60	80.8	6.01	
Fort Meade †	93	.....	.....	3.54	
Frostproof *† [1]	97	72	81.5	4.59	
Gainesville †	100	63	83.4	6.35	
Grasmere †	97	67	83.0	6.86	
Kissimmee †	98	62	84.0	4.17	
Lake Butler †	96	60	82.0	11.22	
Lake City †	94	64	82.4	4.42	
Lemon City †	94	70	82.4	6.40	
Macclenny †	100	60	83.3	7.62	
Manatee †	94	66	80.9	14.37	
Merritts Island †	94	70	80.5	5.63	
Milton †	.....	.....	.....	8.46	
Mullet Key †	92	69	84.4	6.81	
Myers †	93	72	82.5	2.90	
Florida—Cont'd.	°	°	°	*Ins.*	*Ins.*
New Smyrna †	93	66	79.0	4.57	
Oakhill *[1]	93	75	82.0	.....	
Ocala *† [1]	97	62	81.4	5.00	
Orlando †	97	65	82.4	5.24	
Oxford *† [1]	97	70	81.8	1.40	
Plant City †	98	64	82.2	6.94	
St. Francis †	98	63	81.0	5.24	
St. Francis Barracks	95	65	80.6	2.35	
Tallahassee †	93	61	80.6	3.77	
Tarpon Springs †	92	66	81.0	7.66	
Georgia.					
Adairsville †	98	62	80.4	2.36	
Alapaha †	101	56	83.4	4.52	
Albany †	100	67	84.1	2.00	
Allentown †	103	58	86.0	3.79	
Americus †	100	60	84.2	4.69	
Bainbridge †	101	62	83.4	4.03	
Blakely *† [6]	95	67	82.2	3.91	
Brag †	102	63	82.8	6.60	
Canton †	.....	.....	.....	1.46	
Clayton †	95	53	76.0	1.67	
Columbus †	99	66	82.0	5.52	
Cordele †	100	60	83.5	2.45	
Covington	98	54	81.2	3.16	
Dahlonega †	93	56	76.6	2.95	
Diamond †	93	51	75.4	2.76	
Eastman †	102	57	82.6	2.35	
Elberton †	98	61	80.0	1.44	
Fleming †	99	55	86.3	5.49	
Fort Gaines †	100	64	83.2	3.94	
Gainesville †	103	58	81.0	0.77	
Gillsville †	98	59	80.8	1.48	
Griffin †	97	63	82.8	1.75	
Hephzibah *† [6]	94	70	83.9	1.41	
Lagrange †	100	63	83.6	1.28	
Lumpkin †	95	66	82.5	3.88	
Macon † *b*	98	60	81.8	5.66	
Marietta †	94	60	78.6	T.	
Marshallville †	97	63	83.6	2.60	
Milledgeville †	96	59	81.7	2.56	
Millen †	104	55	81.6	2.65	
Monticello †	94	70	82.4	1.10	
Morgan † [b]	98	58	81.4	1.15	
Newnan †	98	64	81.8	2.02	
Point Peter *[1]	96	58	80.3	1.10	
Poulan †	100	59	82.6	5.80	
Quitman †	103	59	83.0	6.04	
Ramsey †	98	59	79.4	2.09	
Rome †	98	63	80.4	4.51	
Talbotton †	.....	67	.....	1.73	
Thomasville †	99	63	83.2	4.69	
Toccoa †	96	60	79.1	1.29	
Waycross †	99	56	82.2	3.30	
West Point †	99	64	82.2	1.85	
Idaho.					
Birchcreek †	94	40	69.6	0.00	
Blackfoot †	98	38	64.6	1.74	
Boise Barracks †	96	44	71.8	1.06	
Burnside †	88	40	65.5	0.05	
Chesterfield †	95	28	59.9	1.90	
Cœur d'Alene	92	38	69.2	.....	
Corral *† [1]	90	45	66.1	0.28	
Dairy †	91	40	67.2	0.97	
Downey †	96	38	65.0	1.65	
Fort Lemhi †	94	38	69.2	0.50	
Fort Sherman †	93	40	65.8	1.22	
Gimlet †	90	33	63.4	T.	
Idaho City †	95[e]	37[e]	67.2[e]	0.91	
Junction †	88	31	60.3	0.76	
Kootenai †	93	44	64.6	.....	
Lewiston *a* †	98[e]	53[f]	73.2[f]	1.47	
Lost River †	.....	.....	.....	0.10	
Martin †	88	33	62.4	0.10	
Minidoka †	100	35	75.4	T.	
Moscow †	93	38	63.6	1.33	
Murray †	92	36	65.6	2.18	
Nampa	98	40	69.8	0.87	
Oakley †	97	43	69.0	0.62	
Paris †	95	36	64.0	0.65	
Payette †	103	40	73.2	0.72	
Pollock †	100	42	70.7	1.02	
Rexburg †	93	35	64.4	0.75	
Roseberry †	86	29	64.6	1.73	
Salubria †	101	41	70.5	1.28	
Shoup †	98	44	71.8	0.20	
Soldier †	95	30	63.1	0.46	
Swan Valley †	93	32	62.5	1.40	
Warren †	90	30	58.8	1.62	
Yellowjacket †	.....	.....	.....	1.45	
Illinois.					
Albion †	99	50	78.0	2.54	
Alexander †	100	44	76.6	0.89	
Ashton *† [1]	97	55	73.6	2.04	
Atlanta	100	49	74.3	4.45	
Atwood *a* *† [2]	104	44	72.2	3.52	
Aurora *a*	102	46	74.9	2.43	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Illinois—Cont'd.	°	°	°	*Ins.*	*Ins.*
Aurora δ†	96	45	72.8	2.68	
Boardstown†	.....	.....	.....	1.73	
Bloomington†	93	47	72.7	4.75	
Bushnell†	101	48	76.3	3.84	
Cambridge	94	50	72.4	3.54	
Carlinville†	100	50	76.8	4.63	
Carlyle	.....	.....	.....	3.55	
Carrollton	93	53	74.4	2.19	
Catlin†	96	43[4]	72.8[a]	3.27	
Cazenovia *†	98[b]	52[a]	76.0[a]	5.25	
Charleston	97	47	74.7	3.18	
Chemung *[1]	96	40	71.8	2.27	
Chester†	.....	.....	.....	2.52	
Cisne *†	98	56	75.0	1.36	
Clearcreek†	98	43	72.8	2.13	
Cobden†	102	49	78.6	2.24	
Cordova	.....	.....	.....	3.53	
Decatur†	96	51	74.9	3.00	
Dixon†	97	47	72.6	3.75	
Duquoin *[1]	102	57	79.2	0.99	
Dwight†	100	41	73.0	2.61	
East Peoria†	97	41	72.3	2.84	
Effingham†	100	45	77.0	1.45	
Evanston *[10]	98	54	74.8	.....	
Fort Sheridan†	95	51	71.6	1.79	
Friendgrove *†	.....	52	73.8	2.98	
Galva†	97	46	72.6	3.69	
Glenwood†	.....	.....	.....	3.01	
Golconda†	103	48	79.6	1.65	
Grafton†	.....	.....	.....	1.93	
Greenville†	104	52	78.7	1.50	
Griggsville†	97	50	75.8	2.72	
Halliday *[5]	100[a]	50[a]	82.4[a]	1.76	
Havana†	96	53	75.6	3.36	
Herrin *[1]	106	56	81.1	0.50	
Hillsboro†	101	50	76.6	2.08	
Iron†	100	51	79.3	1.95	
Joliet†	100	45	75.0	2.75	
Jordans Grove†	98	49	78.3	1.47	
Kankakee *a*	88	52	71.6	4.99	
Kishwaukee	96	46	71.2	1.76	
Knoxville *a*	96	47	73.8	4.91	
Laharpe *[1]	100	44	75.3	7.96	
Lanark *†	97	38	68.4	3.23	
Lexington†	96[1]	43[1]	72.2[1]	5.47	
Loami†	.....	.....	.....	1.00	
Louisville†	96	49	75.1	1.04	
McLeansboro†	102	49	78.0	1.29	
Martinsville†	97	48	74.4	2.83	
Martinton†	98	43	73.6	3.02	
Mascoutah *[6]	108	50	81.0	1.40	
Mattoon *[1]	102	53	77.0	3.04	
Minonk *†	95	56	73.9	2.67	
Monmouth†	95	44	72.4	6.68	
Morrisonville†	95	47	73.8	3.07	
Mount Carmel†	.....	.....	.....	2.52	
Mount Pulaski	97	51	74.8	1.95	
Mount Vernon	99	49	77.4	3.06	
New Burnside†	103	49	80.2	2.54	
Olney *a* *[1]	100	50	78.2	0.47	
Oregon†	97	46	72.0	0.99	
Oswego *[1]	98	44	71.7	4.03	
Ottawa†	98	45	73.4	2.43	
Palestine†	97	47	75.2	3.22	
Paris†	102	49	77.4	5.41	
Peoria *a*†	.....	.....	.....	4.96	
Peoria δ†	101	50	76.7	4.69	
Philo†	97	44	73.2	6.41	
Plumhill *†	104	52	74.7	0.44	
Rantoul *†	100	48	73.5	3.83	
Reynolds	94	46	71.7	3.76	
Riley†	95	44	70.8	2.15	
Robinson *†	97	53	76.2	1.80	
Rockford†	100	50	74.5	3.75	
Rose Hill *†	102	60	79.0	4.24	
Roundgrove†	98	46	73.1	2.99	
St. Charles *†	96	46	72.2	2.61	
St. John *†	100	62	79.4	2.14	
Scales Mound†	95	39	70.9	2.00	
Streator†	96	49	73.7	1.52	
Sycamore†	96	45	70.7	0.58	
Tiskilwa *†	95	52	71.0	2.50	
Tuscola†	99	42	73.0	3.85	
Walnut†	97	37	74.0	2.65	
Wheaton *[3]	.....	50	69.7	2.48	
Winnebago†	95	45	71.0	1.92	
Zion†	94	40	69.2	3.78	
Indiana.					
Anderson†	93	46	72.4	5.30	
Angola *[1]	101	47	71.5	7.60	
Auburn†	95	45	71.6	3.54	
Bloomington†	96	50	74.8	7.49	
Bluffton†	98	42	72.4	7.85	
Butlerville†	97	45	74.5	3.21	
Cambridge City†	92	46	70.6	8.14	
Columbia City *[1]	93	50	70.6	4.12	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Indiana—Cont'd.	°	°	°	*Ins.*	*Ins.*
Columbus†	95	47	73.2	3.50	
Connersville†	91	46	71.5	4.61	
Delphi†	97	46	73.8	6.61	
Edwardsville *†	94	55	77.1	3.97	
Evansville†	101	52	77.6	2.98	
Farmland†	92	47	70.8	8.62	
Greencastle†	92	51	72.8	4.86	
Hammond†	101	44	73.2	5.78	
Huntington	98	47	72.3	8.96	
Jasper†	100	48	77.8	1.47	
Jeffersonville	96	54	76.8	6.12	
Knightstown†	95	46	73.0	5.87	
Kokomo†	98	47	73.6	5.55	
Laconia	97	52	76.5	0.95	
Lafayette†	95	46	72.9	4.03	
Logansport δ†	94	45	71.8	4.05	
Madison†	96	51	75.3	3.33	
Marion†	93	47	72.4	8.86	
Mauzy†	92[a]	46[4]	72.0[a]	4.68	
Mount Vernon†	102	52	80.2	1.49	
Northfield †	94	46	71.9	4.33	
Princeton *†	100	50	75.3	4.11	
Richmond	.....	.....	.....	10.88	
Rockville†	97	46	73.4	3.91	
Scottsburg†	98	51	75.3	3.21	
Seymour†	98	50	75.4	4.55	
South Bend†	96	44	72.0	4.79	
Sunman	92	48	71.6	3.07	
Syracuse†	.....	.....	.....	5.19	
Terre Haute†	100	53	77.2	4.07	
Tipton†	100	47	74.7	5.85	
Valparaiso†	96	47	72.1	6.40	
Vevay	98	53	77.9	4.20	
Vincennes†	104	45	75.6	2.60	
Warsaw†	94	42	71.0	8.26	
Washington†	98	52	76.2	2.71	
Worthington†	96	50	74.2	4.84	
Indian Territory.					
Eufaula†	.....	.....	.....	3.23	
Healdton†	115	59	87.4	1.41	
Lehigh†	111	56	86.2	2.43	
Purcell†	112	56	84.8	2.75	
Tulsa†	.....	.....	.....	0.00	
Iowa.					
Adair	.....	.....	.....	6.83	
Afton	95	45	71.9	7.15	
Algona *[1]	98	48	71.2	2.64	
Alta *a*†	94	42	70.4	1.71	
Amana†	95	44	71.4	3.52	
Ames *c*	.....	.....	.....	2.24	
Atlantic†	97	38	72.0	3.07	
Atlantic (near)	94[a]	45[a]	76.0[a]	2.75	
Audubon	94	36	69.7	3.85	
Belknap	97	46	73.4	5.06	
Belleplaine	96	40	69.3	2.26	
Bonaparte†	99	45	74.0	2.40	
Carroll	98	38	70.8	3.65	
Cedarfalls†	98	39	70.8	2.39	
Cedar Rapids†	98	45	71.8	2.40	
Centerville†	94	53	73.7	12.25	
Chariton	92	50	72.4	7.03	
Charles City†	100	44	73.6	2.67	
Clarinda†	96	50	73.8	2.86	
Clinton	97	44	72.8	2.36	
College Springs	.....	46	.....	3.28	
Corning†	97	42	71.1	5.36	
Council Bluffs	.....	.....	.....	5.80	
Cresco†	96	41	69.1	2.62	
Decorah†	98	39	69.6	1.84	
Delaware *[3]	96	46	70.2	2.24	
Denison†	95	42	71.6	2.72	
Dows	96	39	68.9	2.53	
Eldora	99	39	72.5	2.52	
Elkader†	100	37	70.5	1.90	
Estherville	104	40	71.8	3.83	
Fairfield†	94	45	70.9	7.48	
Fayette†	97	37	69.8	1.91	
Fonda	98	35	73.5	.....	
Forest City	96	39	70.7	2.04	
Fort Madison *†	92	59	75.6	2.60	
Galva†	96	39	71.4	1.30	
Gardengrove	94	45	70.9	4.38	
Glenwood†	97	43	72.0	2.01	
Grand Meadow *[1]	96	48	68.4	2.98	
Greenfield†	95	45	71.7	4.86	
Grundy Center	93	40	70.0	2.85	
Guthrie Center	93	45	72.2	4.95	
Hampton	96	44	70.6	3.17	
Hawkeye	.....	.....	.....	2.89	
Hopeville†	94	49	71.4	5.97	
Humboldt†	96	38	71.3	1.61	
Independence†	94	40	68.7	1.15	
Indianola†	93	51	72.3	7.10	
Iowa City *a*†	98	45	72.2	2.44	
Iowa City δ	93	46	71.8	.....	
Iowa Falls†	94	37	67.7	2.77	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Iowa—Cont'd.	°	°	°	*Ins.*	*Ins.*
Keosauqua†	97	49	74.2	3.43	
Knoxville	94	48	72.4	9.18	
Lansing	99	42	71.0	3.07	
Larrabee†	96	40	71.6	1.47	
Leclaire†	.....	.....	.....	3.42	
Lemars	96	39	73.6	0.96	
Lenox *[1]	92	58	72.0	5.41	
Logan†	98	50	72.2	2.33	
Madrid	104	45	74.2	4.33	
Malvern *[1]	102	40	73.2	3.07	
Maple Valley	.....	.....	.....	1.40	
Maquoketa†	96	44	71.2	3.25	
Marshall†	98	42	71.3	2.83	
Mason City† *	94	39	70.6	3.39	
Maxon *[1]	97	58	74.3	7.30	
Mechanicsville	93	47	70.8	2.35	
Millman	.....	.....	.....	6.54	
Monticello *†	92	49	70.0	1.91	
Mooar	99	44	72.6	2.20	
Mountayr†	98	45	72.4	4.95	
Mount Pleasant *[1]	94	56	74.8	3.99	
Mount Vernon *[1]	96	51	72.4	2.95	
Neola	99	40	72.0	3.12	
Newton†	95	45	70.9	4.61	
North McGregor†	.....	.....	.....	3.26	
Northwood	96	.....	.....	3.39	
Ogden	99	42	72.3	2.69	
Osage *†	95	51	67.0	4.22	
Osceola	95	47	72.8	5.56	
Oskaloosa†	97	43	71.1	4.57	
Ottumwa	97	49	73.8	5.33	
Ovid†	93	47	72.4	5.84	
Panama†	94	44	71.9	3.82	
Plover	.....	.....	.....	3.68	
Portsmouth	103	40	73.3	2.89	
Primghar	97	44	72.6	1.46	
Reinbeck	.....	.....	.....	2.01	
Rock Rapids	100	34	70.7	3.06	
Sac City†	97	42	71.4	1.85	
St. Charles *c*	92	49	71.0	5.70	
Seymour†	95	40	74.0	8.10	
Sibley	94	38	68.6	4.28	
Sidney	93	54	73.0	4.03	
Sigourney	96	50	74.0	4.07	
Spencer	97	38	70.7	2.18	
Spirit Lake†	101	42	71.1	4.26	
Toledo	94	41	70.3	2.98	
Villisca†	94	41	71.3	5.71	
Vinton *†	94	45	70.8	2.71	
Washington†	95	45	72.2	3.79	
Waterloo	96	42	71.4	3.29	
Waukee	98[a]	45	73.2	2.59	
Waverly	94	42	70.6	2.16	
Webster City	94	43	71.2	1.56	
Westbend *†	97	43	69.7	2.76	
Wilton Junction†	95	43	71.2	3.66	
Winterset†	96	39	70.9	6.08	
Kansas.					
Abilene†	105	53	79.7	1.58	
Achilles *[3]	112	57	72.8	1.73	
Altoona *†	104	55	76.7	1.15	
Assaria *[3]	103	50	74.0	0.95	
Atchison †	102	49	75.8	4.16	
Augusta	106	50	80.8	0.54	
Baker	98	50	74.0	6.66	
Beloit†	104	52	76.0	3.78	
Blaine	101	50	74.4	8.56	
Burlington†	110	51	79.4	3.30	
Campbell	102	47	74.0	7.98	
Colby†	102	47	74.7	2.83	
Collyer *[5]	103	55	79.0	4.00	
Columbus†	99	52	78.0	3.25	
Coolidge†	107	53	79.4	0.42	
Cunningham†	112	48	82.7	0.08	
Downs	.....	.....	.....	2.65	
Dresden *†	105	61	75.3	3.74	
Effingham	101	54	77.0	.....	
Elgin *[1]	103	53	79.7	0.10	
Ellinwood†	105	51	78.4	1.68	
Emporia†	103	56	78.8	3.50	
Englewood†	107	47	81.4	1.30	
Eureka†	.....	.....	.....	1.71	
Eureka Ranch†	108	46	77.2	1.17	
Fort Riley †	103	50	78.6	2.60	
Fort Scott†.	101	54	78.6	3.89	
Frankfort	.....	.....	.....	8.10	
Garfield	.....	.....	.....	1.08	
Gibson *[5]	102	49	74.9	3.78	
Girard *[1]	104	60	79.9	1.25	
Gove *†	105	59	77.6	1.61	
Grainfield *[3]	102	54	75.5	4.15	
Grenola *[1]	103	53	79.7	0.10	
Hays†	105	50	77.8	1.95	
Horton†	101	52	75.5	6.47	
Hutchinson†	106	55	80.6	0.85	
Independence†	108	54	82.8	0.57	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Kansas—Cont'd.	°	°	°	*Ins.*	*Ins.*
Lakin †	115	47	83.2	0.60	
Lawrence	102	55	77.0	3.96	
Lebo †	105	53	79.6	2.91	
Linn †	.....	.....	.....	6.84	
Macksville †	106	52	79.7	1.00	
McPherson †	105	51	79.9	2.24	
Manhattan *b*	108	52	78.8	2.26	
Manhattan *c*	110	52	79.8	2.57	
Marion †	.....	.....	.....	2.07	
Meade †	109	50	83.7	2.03	
Medicine Lodge †	110	45	82.5	0.34	
Minneapolis †	107	52	78.0	2.29	
Morantown †	102	53	78.2	3.99	
Morland †	104	48	76.6	5.70	
Morton †	107	50	81.4	0.22	
Mounthope *[1]	106	58	79.3	0.76	
Ness City †	106	49	80.4	1.79	
Norton †	102	43	72.6	3.40	
Norwich †	108	55	82.2	1.45	
Oberlin †	.....	.....	.....	2.88	
Olathe †	104	54	78.6	7.30	
Osage City †	104	50	77.1	4.00	
Ottawa †	104	49	77.2	5.43	
Paola †	103	54	78.4	4.05	
Phillipsburg †	108	48	75.7	5.10	
Pleasant Dale †	105	50	78.4	2.73	
Pratt †	106	52	80.2	0.40	
Rome *† [1]	108	53	81.5	0.67	
Salina †	105	51	79.6	2.08	
Scott City †	105	50	77.2	2.66	
Sedan †	109	48	81.6	0.72	
Sharon Springs *[1]	107	58	78.1	2.50	
Ulysses †	108[4]	.....	.....	0.90	
Wakefield *[1]	107	60	78.6	2.03	
Wallace *[5]	103	56	72.4	2.00	
Wamego *[1]	106	52	77.5	6.79	
Wellington *[1]	102	52	82.7	2.39	
Winfield *[5]	110	48	83.4	0.07	
Winona *[5]	104	50	78.0	2.50	
Yates Center †	103	51	78.0	1.56	
Kentucky.					
Alpha †	97	50	78.4	2.38	
Anchorage † [6]	94	53	76.1	3.29	
Bardstown †	94	56	76.9	1.93	
Blandville †	98	50	77.0	2.31	
Bowling Green *a* *[1]	97	48	74.5	1.31	
Bowling Green *b* †	99	56	79.0	1.48	
Burnside †	.....	.....	.....	1.90	
Caddo †	93	54	74.6	5.00	
Canton *† [1]	100	58	78.4	3.61	
Carrollton †	98	54	78.0	2.82	
Catlettsburg *† [1]	96	62	77.0	2.86	
Earlington	99	53	78.9	1.71	
Edmonton †	92	52	75.5	3.21	
Eubank †	97	50	75.4	5.34	
Falmouth †	.....	.....	.....	2.68	
Fords Ferry †	103	52	80.6	1.07	
Frankfort †	98	41	73.9	3.26	
Franklin *† [1]	98	63	79.3	2.83	
Georgetown	94	53	75.5	.....	
Greendale *[1]	91	57	75.2	2.67	
Greensburg †	96	52	77.6	1.85	
Harrods Creek †	100	53	77.1	2.75	
Henderson †	100	56	79.7	2.44	
Hopkinsville †	96	55	77.8	3.14	
Leitchfield †	97	47	76.0	1.25	
Lola †	102	46	78.8	0.30	
Louisa † *a*	94	51	74.0	6.44	
Marrowbone †	97	48	77.0	2.09	
Maysville †	99	53	77.2	3.43	
Middlesboro †	95	46	75.8	0.86	
Mount Sterling †	96	48	73.2	3.79	
Munfordville *† [1]	95	65	79.9	1.05	
Owensboro †	96	56	77.0	2.45	
Owenton †	96	54	76.3	2.76	
Paducah *a* †	.....	.....	.....	2.03	
Paducah *b* †	105	51	81.2	1.98	
Pleasure Ridge Park †	98	48	75.8	2.55	
Princeton †	103	54	79.5	3.78	
Russellville †	98	52	79.1	1.81	
St. John †	94	54	75.4	1.25	
Sandyhook †	.....	.....	.....	6.40	
Shelby City *[1]	99	52	75.7	2.06	
Shelbyville †	99	50	77.6	2.69	
Southfork † [2]	.....	.....	72.0	4.65	
Springfield †	96	46	75.5	1.29	
Vanceburg †	94	50	73.6	6.00	
Williamsburg †	95	50	76.9	5.20	
Louisiana.					
Alexandria †	102	55	83.4	2.24	
Amite †	104	62	83.0	3.06	
Bastrop †	105	56	84.1	3.86	
Baton Rouge †	98	64	82.8	3.95	
Calhoun †	104	55	84.1	3.07	
Cameron †	99	69	85.8	0.85	
Cheneyville †	103	56	83.0	2.57	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Louisiana—Cont'd.	°	°	°	*Ins.*	*Ins.*
Clinton †	99	61	82.2	3.99	
Covington †	100	65	82.0	4.05	
Davis	102	52	81.2	1.39	
Donaldsonville †	96	68	82.6	4.16	
Elm Hall	98	64	79.0	1.30	
Emilie †	95	65	81.2	3.19	
Farmerville	102	56	83.2	2.91	
Franklin †	98	67	82.5	5.44	
Grand Coteau	95	63	81.6	1.76	
Hammond †	96	63	82.2	2.93	
Jeanerette †	101	65	84.0	2.26	
Lafayette †	100	61	82.8	1.95	
Lake Charles †	96	65	81.8	3.37	
Lake Providence †	106	63	85.7	1.76	
Lawrence †	99	73	85.5	8.41	
Liberty Hill	110	55	84.0	0.77	
Mansfield †	104	50	84.0	1.60	
Maurepas	102	.....	.....	1.33	
Melville †	98	61	82.1	8.95	
Minden †	106	60	85.4	2.39	
Monroe †	102	61	85.0	2.16	
Oakridge †	109	53	85.8	0.98	
Oberlin	100	59	81.5	1.15	
Opelousas †	100	56	83.0	5.86	
Oxford †	104	52	82.6	2.77	
Paincourtville †	97	63	81.5	3.22	
Plain Dealing †	103	60	85.0	3.15	
Rayne †	101	62	84.2	3.14	
Robeline †	104	49	83.6	1.44	
Schriever †	99	65	82.7	5.94	
Shellbeach †	96	64	83.2	3.37	
Southern University †..	95	68	80.6	4.15	
Sugar Ex. Station †	98	69	84.2	3.29	
Sugartown †	99	61	86.4	4.24	
Thibodeaux	.....	.....	.....	4.45	
Venice †	96	71	82.4	4.15	
Wallace	96	68	82.2	3.20	
West End	.....	.....	.....	3.99	
White Sulphur Springs †	104	48	84.4	1.77	
Maine.					
Bar Harbor	92	40	63.7	2.90	
Belfast *[6]	84	55	64.0	5.02	
Cornish *[1]	94	48	66.9	5.02	
Cumberland Mills	95	44	67.8	2.23	
Fairfield	89	42	64.8	3.83	
Farmington †	100	42	68.8	3.97	
Flagstaff †	96	37[4]	64.2[e]	3.14	
Fort Fairfield †	93	33	62.5	2.53	
Gardiner	100	46	68.5	2.88	
Kineo †	88	45	65.1	2.00	
Lewiston	96	48	68.5	2.98	
Mayfield	91	39	63.4	4.90	
North Bridgton	94	47	68.6	3.72	
Petit Menan *[1]	74	50	60.1	.....	
Winslow	95[e]	42[e]	67.0[e]	3.59	
Maryland.					
Annapolis	94	52	76.4	.....	
Bachmans Valley	98	44	72.0	1.85	
Boettcherville *[1]	98	46	70.7	2.60	
Charlotte Hall †	98	52	76.8	0.94	
Cherryfields † [2]	.....	.....	76.2	0.79	
Chestertown †	93	53	75.4	2.11	
Collegepark	98	44	73.7	1.91	
Cumberland *a*	98	50	72.1	1.71	
Cumberland *b*	97	53	76.4	1.64	
Darlington †	95	50	94.0	1.29	
Deerpark	91	34	65.6	1.37	
Denton † [f]	98	50	76.0	1.07	
Easton †	98	50	75.5	1.53	
Fallston *[3]	95	55	73.3	0.95	
Flintstone	98	39	71.1	1.73	
Frederick *a*	99	45	74.4	0.77	
Grantsville	91	38	67.4	1.90	
Greatfalls *[5]	94	56	76.0	1.38	
Greenspring Furnace	97	44	78.6	0.87	
Hagerstown †	97	49	75.2	1.80	
Jewell †	97	51	75.8	0.91	
Johns Hopkins Hospital	97	52	75.5	.....	
Laurel	97	49	74.1	3.76	
Mardela Springs †	100	53	74.3	4.50	
Mount St. Marys Coll. † [2]	96[e]	58[e]	72.0	1.70	
New Market	98	49	75.4	1.77	
Pocomoke City	100	55	76.0	3.00	
Princess Anne	98	46	73.4	3.54	
Sharpsburg	96	45	73.7	0.71	
Solomons †	98	59	79.0	2.45	
Sunnyside	90	36	66.0	2.90	
Taneytown †	100	46	76.0	0.59	
Van Bibber	96	50	75.2	1.13	
Western Port	98	43	72.0	1.08	
Woodstock	97	45	73.3	1.25	
Massachusetts.					
Adams	92	42	67.8	.....	
Amherst	92	43	67.6	3.51	
Amherst Ex. Station *b*	97	42	68.8	3.84	
Andover †	95	42	67.9	1.47	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Massachusetts—Cont'd.	°	°	°	*Ins.*	*Ins.*
Ashland	.....	.....	.....	2.05	
Attleboro	.....	.....	.....	2.84	
Bedford	92	47	67.7	2.64	
Beverly Farms	85	46	66.4	2.90	
Bluehill (summit)	93	48	68.8	3.96	
Bluehill (valley)	94	39	68.8	2.60	
Boston *a*	.....	.....	.....	1.72	
Brockton *a*	98	48	71.3	2.14	
Brockton *b*	.....	.....	.....	2.03	
Brockton *c*	.....	.....	.....	2.28	
Buzzards Bay	94	36	66.0	3.10	
Cambridge *a*	95	48	71.4	2.13	
Chestnut Hill	97	46	70.8	2.74	
Clinton	.....	.....	.....	2.00	
Cohasset	.....	.....	.....	2.23	
Concord †	95	42	69.6	3.10	
Dudley [1]	95[e]	47	70.1	2.55	
East Templeton *[1]	92	52	68.5	2.35	
Egg Rock Nahant	83	52	67.6	.....	
Fallriver	93	51	71.3	3.87	
Fitchburg *a* *[1]	92	52	68.7	2.29	
Fitchburg *b*	95	46	70.1	2.06	
Framingham	97	45	71.1	2.74	
Groton	93	42	68.9	2.67	
Hadley	95	40	68.2	3.43	
Hingham	.....	.....	.....	2.14	
Hobbs Brook	.....	.....	.....	3.05	
Hyannis *† [1]	96	52	72.2	4.20	
Hyde park *[6]	.....	56	71.2	.....	
Lake Cochituate	97	41	70.1	2.43	
Lawrence	97	47	71.4	2.69	
Leeds	91	42	68.2	3.74	
Leicester Hill	92	44	67.8	2.44	
Leominster	.....	.....	.....	2.70	
Long Plain *[5]	90	48	69.3	3.30	
Lowell *a*	96	45	70.8	2.76	
Lowell *b*	94	44	69.6	.....	
Lowell *c*	98	46	71.6	.....	
Ludlow Center	90	37	66.0	1.33	
Mansfield *[1]	94	43	67.8	2.00	
Middleboro	93	43	68.3	2.66	
Milton	93	45	67.6	1.79	
Monroe	87	37	62.8	4.02	
Monson	92	42	68.9	2.03	
Mount Nonotuck	.....	.....	.....	3.20	
Mount Wachusett	.....	.....	.....	3.07	
Mystic Lake	.....	.....	.....	2.90	
Mystic Station	.....	.....	.....	2.81	
Natick *[1]	88	54	69.5	2.24	
New Bedford *a*	88	49	69.4	3.79	
New Bedford *b*	91	45	69.7	3.58	
Pittsfield	89	43	67.7	3.90	
Plymouth *[1]	89[e]	56	69.1	1.74	
Princeton	.....	.....	.....	2.71	
Quinapoxet	.....	.....	.....	3.28	
Roberts Dam	.....	.....	.....	2.79	
Roxbury [4]	92	50	70.7	2.42	
Salem	.....	.....	.....	2.37	
Somerset	.....	.....	.....	2.60	
South Clinton	.....	.....	.....	2.23	
Springfield Armory	96	42	69.0	2.58	
Sterling	.....	.....	.....	2.26	
Taunton *b*	96	44	70.1	3.80	
Taunton *c*	93	41	68.2	3.37	
Taunton *d*	97	42	70.0	3.35	
Wakefield †	94	44	70.1	2.38	
Waltham	.....	.....	.....	2.35	
Webster	.....	.....	.....	2.86	
Westboro †	95	44	69.9	3.15	
Weston	94	46	69.6	2.41	
Williamstown *[1]	88	49	67.6	3.06	
Winchendon	.....	.....	.....	2.65	
Winchester	.....	.....	.....	2.26	
Worcester *a*	92	49	70.0	2.50	
Worcester *b*	91	50	69.6	2.56	
Michigan.					
Adrian	98	43	70.6	4.86	
Allegan	95	38	71.4	2.47	
Alma	94	36	68.8	3.25	
Ann Arbor	93	46	68.6	2.63	
Arbela	93	39	68.8	3.62	
Badaxe †	93	40	69.6	3.12	
Ball Mountain	90	45	67.4	4.73	
Baraga	93	34	68.7	3.42	
Battlecreek	98	43	72.4	2.76	
Bay City *a*	94	42	68.3	2.75	
Bay City *b*	96	43	69.3	3.05	
Benzonia	.....	.....	.....	2.11	
Berlin *[1]	94	42	68.7	3.53	
Berrien Springs	98	40	72.0	1.87	
Big Rapids	93	36	67.4	4.40	
Birmingham	93	45	69.9	3.49	
Bois Blanc *[10]	94	45	66.9	.....	
Boon	93	35	65.2	5.23	
Bronson	98	44	72.8	2.87	
Calumet	86	44	62.7	4.75	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Michigan—Cont'd.	°	°	°	*Ins.*	*Ins.*
Charlevoix	96	42	65.6	3.50	
Cheboygan	91	37	65.9	3.65	
Clinton	98	44	71.1	4.24	
Escanaba†	94	39	65.4	5.06	
Fitchburg	98	39	69.2	4.73	
Flint	93	38	68.5	4.90	
Gaylord	89	34	64.4	7.06	
Gladwin	94	34	66.4	2.70	
Grand Rapids *b*	94	43	71.4	2.53	
Grape	97	45	70.6	3.30	
Grayling	95	31	66.2	3.79	
Hanover	93	41	69.3	4.11	
Harrison	93	32	66.5	2.81	
Harrisville	96	40	66.5	4.08	
Hastings	93	42	69.8	4.98	
Hayes	94	40	69.2	2.44	
Hesperia	96	36	69.2	4.20	
Highland Station				4.68	
Holland *[10]	87	55	71.4		
Howell	96	31	68.1	5.67	
Iron River	92	31	62.6	6.45	
Ivan	95	36	67.2	3.18	
Jeddo	91	43	67.0	6.16	
Kalamazoo	98	43	71.6	6.20	
Lake City	93	37	67.0	3.70	
Lansing	93	39	68.3	3.28	
Lathrop	91	28	62.0	3.43	
Lewiston	95	38	66.5	6.06	
Ludington *[10]	86	50	67.2		
Luzerne				5.01	
Mackinaw City	86	40	64.9	3.77	
Madison	95	45	70.4	3.88	
Mancelona	91	35	65.2	4.48	
Manistique	87	40	63.8	5.29	
Mayville	93	42	68.3	5.36	
Middle Island *[10]	85	53	66.5		
Midland	97	42	69.9	1.60	
Mottville	97	40	71.4	3.55	
Mount Clemens	97	44	70.0	3.74	
Mount Pleasant *a*	92	36	69.0	2.43	
Mount Pleasant *b*	95	38	69.4	3.06	
Muskegon	87	42	69.3	1.34	
North Manitou Island *[10]	87	42	66.6		
North Marshall	92	43	69.2	2.98	
Northport	87	43	66.8	2.41	
Old Mission	91	44	69.2	4.08	
Olivet	92	44	69.6	5.44	
Ovid	93	42	68.8	7.63	
Owosso	93	39	68.4	5.28	
Parkville				7.02	
Petoskey	88	39	65.5	6.37	
Plymouth	95	42	69.4	2.42	
Pontiac	90	45	67.4	5.13	
Port Austin	95	45	68.2	2.90	
Powers	94	31	64.7	5.59	
Reed City	94	34	67.3	2.16	
Rockland [8]	95	40	65.9	0.75	
Rogers City	89	36	64.4	4.48	
Romeo	94	46	69.6	1.29	
Saginaw				5.06	
St. Ignace *	84	42	65.8	1.80	
St. Johns	94	42	70.3	7.28	
Sandbeach *a*	95	43	66.6	3.99	
Saranac	94	36	70.4	4.65	
Somerset				3.58	
South Haven	94	43	70.3	1.39	
Stanton	94	40	68.6	2.88	
Sturgeon Point *[10]	89	36	68.8		
Thornville	92	45	69.9	6.23	
Thunder Bay Island *[10]	93	51	67.0		
Traverse City	97	41	69.6	1.66	
Two Heart River *[10]	86	38	63.5		
Valley Center	93	34	67.0	4.88	
Vandalia	96	50	71.7	3.59	
Ypsilanti	91	46	68.9	3.44	
Minnesota.					
Ada†	91	35	64.6	1.45	
Albert Lea†	94	44	69.0	1.73	
Alexandria†				1.08	
Beardsley†	98	33	68.8	1.62	
Belleplaine *[1]	100	50	70.7	1.00	
Bermidji†	95			4.18	
Bingham Lake†	100	42	70.3		
Bird Island	100	38	68.4	0.70	
Blooming Prairie†	98	42	69.3	1.55	
Bonniwell†	101	40	69.6	2.60	
Breese†	90	29	61.8	2.65	
Caledonia†	96	44	70.3	2.50	
Cambridge†	95	35	65.9	1.92	
Camden†	98	43	69.2	0.90	
Clear Lake†	99	39	65.1	2.82	
Collegeville	100	46	69.4	1.22	
Crookston†	91	37	64.5	3.13	
Dawson *[1]	103	36	67.0	0.39	
Detroit City†	94	34	62.9	1.62	
Farmington†	101	40	69.4	2.43	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Minnesota—Cont'd.	°	°	°	*Ins.*	*Ins.*
Fergus Falls†	90	41	66.4	1.27	
Glencoe†	99	35	69.2	1.49	
Glenwood†	100	30	67.9	0.85	
Grand Meadow†	101	44	72.2	2.32	
Granite Falls†	102	37	68.6	0.55	
Lakeside†	99	31	67.0	0.45	
Lake Winnibigoshish [1]	87	44	63.8	4.00	
Lambert†	91	28	62.0	1.80	
Lawrence†	98	35	65.3	1.60	
Leech Lake [1]	88	35	63.5	3.17	
Lesueur *[1]	104	40	70.0	T.	
Long Prairie†	92	34	67.0	0.83	
Luverne†	97	44	69.1	4.21	
Mapleplain	98	40	68.8	5.27	
Maplewood *[1]	95	54	70.9		
Mazeppa [1]	104	38	72.5	3.11	
Milan†	97	32	69.2	1.77	
Minneapolis *a*†	96	42	68.9	4.15	
Minneapolis *b* [1]	98	38	67.9	3.65	
Minnesota City†	97	40	71.0	2.13	
Montevideo†	100	38	69.8	1.55	
Mount Iron†	89	30	62.1	4.85	
New London	98	38	67.5	4.74	
New Richland *[1]	97	49	71.1		
New Ulm†	103	41	70.9	0.34	
Park Rapids†	92	32	63.3	2.89	
Pine River *[1]	95	44	65.6	1.93	
Pleasant Mounds†	100	41	69.6	2.05	
Pokegama Falls [1]	91	30	61.6	2.42	
Redwing†				1.55	
Reeds†				1.35	
Roseau†	85	30	60.0	2.25	
St. Charles†	97	38	69.3	2.29	
St. Cloud	98	42	67.8	1.66	
St. Olaf	91	43	66.2	1.55	
Sandy Lake Dam [1]	89	35	64.0	3.27	
Sauk Center	96	35	65.6	0.72	
Shakopee [6]	98	42	72.2	2.93	
Tower†	91	33	61.1	4.30	
Two Harbors†	88	39	63.3	1.81	
Wabasha *[1]	102	47	72.4	1.19	
Willmar†	98	38	67.6	4.39	
Winona	96	46	70.7	2.77	
Worthington	96	33	69.6	1.73	
Zumbrota [1]	98	34	70.8		
Mississippi.					
Aberdeen†	102	51	81.5	2.60	
Agricultural College	102	60	83.8	1.47	
Austin†	100	60	82.9	2.01	
Batesville†	102	52	81.0	1.85	
Bay St. Louis†	95	72	82.4	9.29	
Biloxi†	100	70	84.6	3.70	
Booneville†	100	55	81.4	1.08	
Briers†	97	60	81.6	1.86	
Brookhaven†	105	58	83.0	3.14	
Canton†	99	58	83.4	1.09	
Columbus *a*†				1.38	
Columbus *b*†	105	58	84.8	1.31	
Corinth†	102	56	80.2	1.90	
Crystal Springs†	100	61	83.6	2.70	
Edwards	102	60	84.6	3.20	
Enterprise†	100	63	82.4	3.14	
Fayette†	101	57	83.2	2.95	
French Camps†	104	47	81.0	2.60	
Fulton†	104	54	83.8	2.08	
Greenville *a*	100	64	81.5	1.44	
Greenville *b*†	104	60	84.7	1.84	
Hazlehurst†	100	60	83.6	1.82	
Hernando†	104	60	83.4	0.18	
Holly Springs†	103	58	82.8	3.72	
Jackson†	104	58	83.4	2.76	
Kosciusko†	102	55	81.5	7.11	
Lake†	100	59	81.4	3.87	
Leakesville†	98	66	82.4	3.21	
Logtown†	96	68	80.7	6.75	
Louisville†	101	61	83.1	3.79	
Macon†	106	58	85.4	0.68	
Magnolia†	102	61	83.0	5.26	
Mayersville *[1]	99	68	80.3		
Natchez†	100	61	83.4	3.35	
Okolona†	106	55	83.3	2.04	
Palo Alto†	102	69	86.0	0.02	
Pontotoc†	102	48	81.3	1.60	
Port Gibson†	104	54	84.0	1.25	
Rosedale†	101	55	81.6	0.87	
Stonington *[1]	100	66	81.8		
Thornton†	100	57	83.2	0.90	
Topton *[5]	98	66	84.5	1.70	
University†	98	60	82.3	1.38	
Water Valley *† [1]	107	56	80.6	2.26	
Waynesboro *a*†	98	64	81.0	5.00	
Waynesboro *b*†	99	68	83.8	5.13	
Windham†	102	61	83.5	2.80	
Woodville†	97	60	81.9	4.65	
Yazoo City†	107	52	84.6	1.68	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Missouri.	°	°	°	*Ins.*	*Ins.*
Akron				3.91	
Arthur *† [3]		58	77.0	2.91	
Bethany	96	47	74.0	4.04	
Birchtree	103	49	76.2	3.08	
Bolckow†				7.54	
Boonville†				1.96	
Brunswick	97	54	75.6	1.59	
Carrollton†	100	56	77.0	3.86	
Cedargap *[1]	100	58	76.3	1.65	
Conception	91	57	73.6	7.73	
Cowgill *[5]	102	58	76.8	2.28	
Darksville†	102	53	76.2	1.55	
Downing				3.56	
East Lynne *[3]		52	72.4	4.41	
Edgehill *[5]	98	54	75.8	3.33	
Eightmile *[1]	101	56	74.0	4.09	
Elmira	106	45	76.3	2.86	
Emma *[3]		60	78.8	2.60	
Farmersville				4.76	
Fayette	102	53	77.4	1.05	
Fulton				2.68	
Gallatin *[1]	101	53	74.7	4.95	
Gayoso *[3]		58	76.4	1.68	
Glasgow	103	52	77.0	1.29	
Gordonville *[3]		55	74.8	2.37	
Gorin *[3]	99	52	73.5	4.56	
Grovedale	108	41	77.6	2.63	
Halfway	100	50	76.6	3.77	
Harrisonville†	104	53	77.8	5.64	
Hermann†				1.94	
Houston	102	44	75.1	4.96	
Houstonia (near)				3.04	
Irena				8.45	
Ironton†	102	43	75.8	2.26	
Jefferson City†	102	53	78.3	1.15	
Kidder	102	49	75.1	2.65	
Lamar†	98	52	77.6	3.89	
Lamonte				1.85	
Lebanon	101	54	77.6	4.07	
Lexington†	102	56	76.4	3.11	
Liberty	105	54	77.9	3.99	
McCune *† [1]	98	55	76.8	2.29	
Macomb				2.13	
Marblehill	100	46	76.7	1.80	
Marceline	100	47	72.9	1.93	
Maryville	97	48	73.7	6.82	
Mexico†	103	49	76.8	2.17	
Mine La Motte†	96	48	75.2	2.38	
Mineralspring	102	51	76.8	5.26	
Montreal *[1]	100	56	74.4	2.94	
Mount Vernon	106	48	77.8	4.05	
Neosho	102	50	79.0	2.20	
Nevada				2.71	
New Haven *[1]	101	61	80.3	2.48	
New Madrid	100	56	81.6	4.32	
New Palestine *† [1]	99	60	79.4	1.88	
Oakfield†	100	54	77.6	2.15	
Oakmound				1.76	
Oakridge *[3]		60	75.8	1.87	
Olden†	103	52	77.0	2.95	
Oregon *a*	97	55	75.3	6.47	
Oregon *b* *[1]	96	53	74.1	6.79	
Osceola†				4.65	
Oto				7.20	
Palmyra *[5]	100	58	79.0	1.74	
Phillipsburg *† [1]	102	59	76.1	4.49	
Pickering *[3]	100	48	75.7	5.22	
Platte River *[3]	99	52	72.5	3.77	
Poplar Bluff	101	52	79.4	1.85	
Potosi	97	42	72.7	4.02	
Princeton *[1]	103	49	73.6	5.17	
Rhineland	99	50	76.4	1.56	
Richmond	102	58	77.4	3.26	
Rolla				3.16	
St. Charles	100	53	78.0	2.49	
St. Joseph†				3.24	
St. Louis	99	48	75.8	2.90	
Sarcoxie *[3]	105	54	77.0	4.44	
Shelbina				2.30	
Sikeston	98	53	79.7	3.20	
Steffenville				2.07	
Stellada†	105	52	76.4	3.81	
Sublett	96	44	74.1	2.05	
Tindall†				1.72	
Trenton	99	52	75.0		
Unionville†	100	52	75.6	4.63	
Versailles				2.14	
Virgil City				2.44	
Warrenton	98	53	76.7	1.83	
Wheatland				3.67	
Willow Springs	105	47	76.7	5.26	
Zeltonia *[1]	104	55	79.1	0.38	
Montana.					
Agricultural College	86	37	63.0	0.37	
Augusta†	94	36	63.9	1.78	
Bigtimber†	95	40	68.4	0.43	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Montana—Cont'd.	°	°	°	*Ins.*	*Ins.*
Boulder [1]	93	35	66.4	2.50	
Bozeman †	87	36	63.2	0.38	
Butte †	88	35	62.4	0.87	
Chinook †	100	42	66.8	0.79	
Choteau †	96	35	63.2	2.52	
Cokedale †	92	35	64.2	0.40	
Columbia Falls † [c]	87	42	66.2	2.83	
Dillon †	89	30	59.4	0.45	
Fort Custer †	98	45	70.0	0.75	
Fort Keogh †	100	41	70.2	0.46	
Fort Logan †	89	32	60.3	.....	
Fort Missoula	90	38	63.0	1.42	
Glasgow †	99	31	65.6	0.22	
Glendive †	100	48	71.0	0.70	
Greatfalls †	98	40	64.6	0.27	
Hogan †	93	33	61.2	2.26	
Kalispel †	88	32	62.6	0.18	
Kipp †	90	28	56.8	2.74	
Lewistown †	90	30	60.4	0.39	
Libby †	96	33	63.8	0.94	
Livingston †	92	36	66.6	0.15	
Manhattan †	90	30	61.8	0.44	
Martinsdale †	91	35	62.7	0.49	
Marysville †	89	38	61.8	1.47	
Musselshell †	103	32	67.6	.....	
Poplar †	100	38	66.2	0.55	
Radersburg †	.....	35	.....	1.25	
St. Pauls †	91	40	64.4	0.03	
Troy †	90	35	62.0	0.79	
Utica †	98	34	63.7	1.93	
Virginia City †	87	40	64.1	0.86	
White Sulphur Springs †	89	32	58.7	0.80	
Wibaux †	96	38	66.1	0.30	
Yale †	94	31	63.0	0.18	
Nebraska.					
Agee *[1]	99	52	70.9	1.12	
Albion †	100	45	72.9	0.69	
Alliance	.....	.....	.....	0.26	
Alma *[1]	102	46	77.3	4.97	
Ansley †	101	40	71.9	0.64	
Arapaho	.....	.....	.....	2.80	
Arborville	98	48	72.2	1.48	
Arcadia	102	45	74.2	0.45	
Ashland *a* †	98	46	73.8	2.85	
Ashland *b* *[1]	103	53	74.8	2.77	
Ashton	100	46	74.7	0.63	
Auburn *† [1]	100	50	75.1	6.30	
Aurora *[1]	99	54	74.1	2.06	
Bassett	98	41	70.3	0.53	
Beatrice †	97	48	73.2	8.43	
Beaver City †	104	47	74.6	2.54	
Benkelman *[1]	108	52	78.6	1.47	
Blair	.....	.....	.....	3.09	
Bluehill *[1]	101	56	75.8	4.27	
Bratton	96	51	73.8	4.51	
Burchard	.....	.....	.....	3.60	
Burwell *[1]	96	50	73.3	1.47	
Callaway †	100	40	73.3	1.95	
Central City *[5]	98	58	79.1	1.12	
Chester *[1]	102	52	72.6	4.84	
Columbus †	96	45	71.9	2.32	
Cook	99	58	78.3	4.11	
Cornlea	.....	.....	.....	0.45	
Creighton † [4]	97	40	70.5	1.15	
Crete	95	51	74.2	3.66	
Culbertson	.....	.....	.....	2.67	
Curtis *a* †	102	48	77.2	2.71	
Curtis *b*	.....	.....	.....	2.90	
David City *† [1]	97	52	71.6	1.45	
Divide	.....	.....	.....	0.48	
Dunning *[1]	99	58	74.9	0.00	
Edgar *[1]	102	55	75.7	5.17	
Elba	.....	.....	.....	0.56	
Ericson *† [1]	100	55	76.8	2.07	
Ewing	.....	.....	.....	2.08	
Fairbury †	97	54	74.0	5.49	
Fairmont †	105	45	75.6	1.57	
Fort Robinson	100	43	72.0	0.50	
Fremont	96	45	72.0	1.50	
Geneva †	101	48	74.0	4.96	
Gering †	102	42	72.5	1.31	
Gibbon	95[e]	46	73.3[e]	2.10	
Gothenburg	104	43	74.0	1.55	
Grand Island *a*	.....	.....	.....	1.16	
Grand Island *b*	98	47	73.8	1.31	
Greeley	.....	.....	.....	0.05	
Haigler	.....	.....	.....	0.94	
Hartington †	97	42	70.7	1.66	
Harvard *[1]	102	53	73.8	2.27	
Hastings *[1]	99	52	73.0	2.42	
Hayes Center †	.....	.....	.....	2.54	
Hay Springs †	99[h]	44[h]	70.8[h]	0.86	
Hebron †	101	48	73.3	4.65	
Hickman	.....	.....	.....	2.60	
Holdrege *b* *[1]	100	55	75.6	3.10	
Imperial *a* †	104	41	74.0	1.45	
Nebraska—Cont'd.					
Indianola (near) *[1]	99[d]	54[e]	75.0[d]	3.77	
Kearney *[1]	100	52	78.0	3.49	
Kennedy †	98	54	69.6	0.25	
Kimball †	97	43	71.1	2.22	
Kirkwood *[1]	100	50	70.4	1.02	
Lexington †	99	40	71.5	1.69	
Lincoln *b* †	97	49	73.4	3.93	
Lincoln *c*	98	49	74.0	3.39	
Lincoln *d*	98	50	73.5	2.34	
Lodgepole †	98	50	71.9	0.96	
Loup *a*	98	52	77.5	0.70	
Loup *b* *[1]	98	48	73.8	0.80	
Lynch *† [1]	100	45	72.2	1.25	
Lyons	.....	.....	.....	1.32	
McCook *[1]	103	57	80.4	3.32	
McCool	.....	.....	.....	1.77	
Madison *[1]	100	42	70.5	1.36	
Madrid *† [5]	107	45	75.4	2.10	
Marquette	.....	.....	.....	0.90	
Milford *[1]	96[e]	56[e]	73.4[e]	2.74	
Minden *a* *[1]	100	50	72.5	2.61	
Minden *b*	.....	.....	.....	2.60	
Nebraska City *a* †	96	52	75.5	5.11	
Nebraska City *b* *[1]	96	52	74.4	5.64	
Nemaha *[1]	101	54	75.9	5.33	
Nesbit †	98	42	71.4	0.57	
Norfolk †	93	47	71.5	1.08	
Norman	106	50	76.0	2.74	
North Loup †	97	39	72.5	0.55	
Oakdale †	96	42	70.8	1.12	
Odell *[5]	96	58	75.2	4.85	
O'Neill †	96	46	69.4	1.56	
Ord	100	42	73.7	0.32	
Osceola	.....	.....	.....	1.80	
Ough †	.....	.....	.....	0.85	
Palmer *a* *[1]	100	56	73.7	0.45	
Palmer *b*	.....	.....	.....	0.67	
Plattsmouth *a* †	.....	.....	.....	3.49	
Ravenna *a*	98	42	73.1	0.89	
Ravenna *b* *[1]	95	50	72.5	0.30	
Redcloud *a*	.....	.....	.....	5.69	
Redcloud *b* *[1]	103	55	76.2	5.60	
Republican *[1]	102	54	76.0	3.68	
Rulo *[1]	104	56	77.3	5.47	
St. Libory	98	50	74.2	0.87	
St. Paul	98	50	76.1	1.05	
Salem *[1]	100	54	78.2	4.80	
Santee Agency †	105	45	73.9	1.76	
Sargent	.....	.....	.....	0.42	
Schuyler	.....	.....	.....	1.09	
Seneca *[1]	99	40	72.4	0.20	
Seward *[5]	95	57	76.6	1.79	
Springview	101	40	72.2	1.27	
Stanton *[1]	96	49	70.8	1.65	
State Farm	.....	45	.....	3.18	
Stockham	.....	.....	.....	1.20	
Strang *[1]	100	54	76.9	4.80	
Stratton	.....	.....	.....	1.45	
Stromsburg	.....	.....	.....	1.80	
Superior *[5]	102	52	75.6	6.46	
Sutton	99	48	72.1	3.12	
Syracuse	.....	.....	.....	1.99	
Tecumseh *a* †	97	45	73.0	4.43	
Tecumseh *b* †	100	46	74.7	3.89	
Tekamah	97	45	71.7	2.85	
Thedford *[1]	98	42	68.9	0.20	
Turlington †	99	47	73.4	4.31	
Valentine †	95	44	69.8	0.77	
Wakefield	.....	.....	.....	1.83	
Wallace	.....	.....	.....	1.86	
Weeping Water *[1]	98	43	70.7	4.18	
Whitman	.....	.....	.....	1.29	
Wilber *[1]	96	58	75.0	5.22	
Wilsonville *[1]	104	50	77.9	3.27	
Wisner	.....	.....	.....	1.30	
Woodlawn	.....	.....	.....	3.60	
York *[1]	101	50	75.6	1.25	
Nevada.					
Austin	89	45	68.6	0.58	
Battle Mountain *[1]	95	58	71.3	0.00	
Belmont	86	44	64.3	2.02	
Beowawe *[1]	97	58	71.8	0.20	
Candelaria	99	52	74.0	0.32	
Carlin *[1]	100	48	68.0	T.	
Carson City	92	39	65.6	1.30	
Cloverdale *[1]	90	60	72.4	0.04	
Cranes Ranch	.....	.....	.....	0.36	
Duckwater	100	40	72.2	1.04	
Elko *[3]	100	50	66.4	0.50	
Ely	94	38	64.0	1.05	
Empire Ranch †	.....	.....	.....	2.40	
Fenelon *[1]	99	50	67.6	1.28	
Golconda *[1]	98	52	70.7	0.05	
Halleck *[1]	102	48	62.2	0.34	
Hawthorne *b*	94	52	72.9	1.53	
Humboldt *[3]	95	54	74.1	0.30	
Nevada—Cont'd.					
Los Vegas	98	55	74.4	0.97	
Lewers Ranch	90	40	66.4	0.94	
Lovelock *[1]	100	60	76.9	0.00	
Midas	88	48	67.6	1.05	
Mill City *[1]	102	52	70.7	0.00	
Osceola	93	50	70.8	1.08	
Palisade *[1]	100	46	69.8	0.60	
Palmetto	92	40	64.8	3.05	
Reno *[2]	96	50	70.6	.....	
Reno State University	92	40	66.9	0.79	
Saint Clair	89	44	69.1	0.18	
Saint Thomas	109	55	82.6	0.48	
San Antonio	96	41	69.5	1.89	
Sodaville	100	51	75.2	0.45	
Tecoma *[1]	98	53	71.2	0.20	
Toano *[1]	100	55	70.4	0.62	
Tybo	94	44	67.4	1.42	
Verdi *[1]	91	49	68.4	0.74	
Wadsworth *[1]	98	48	71.0	1.30	
Wells	96	54	67.0	0.90	
New Hampshire.					
Alstead *[6]	88	44	71.6	5.01	
Belmont	.....	.....	.....	2.73	
Bethlehem	87	42	64.8	2.73	
Brookline *[1]	96	42	68.3	2.76	
Concord	93	38	67.6	5.75	
Durham	95	43	67.7	3.69	
Grafton †	93	36	66.0	3.70	
Hanover	89	43	66.7	3.07	
Keene	92	37	66.5	2.81	
Lakeport	.....	.....	.....	2.70	
Lancaster	92	36	64.4	4.57	
Nashua	97	41	69.7	3.40	
Newton †	93	42	67.9	2.37	
North Conway	94	41	66.6	3.60	
Peterboro	92	35	67.0	1.84	
Plymouth	95	39	67.1	3.61	
Rye Beach	89	47	65.6	3.16	
Sanbornton †	90	41	65.6	4.04	
Stratford	99	38	67.1	3.19	
Warner	.....	.....	.....	3.31	
Weirs Bridge	.....	.....	.....	2.73	
West Milan	90	28	63.6	3.50	
Wolfboro	.....	.....	.....	2.27	
New Jersey.					
Allaire	99	45	73.2	.....	
Asbury Park	96	54	73.0	0.91	
Barnegat	100	48	74.4	2.72	
Bayonne	98	51	75.0	2.77	
Belvidere	99	44	72.2	2.32	
Beverly †	100	49	75.8	0.50	
Billingsport *[1]	96	58	75.1	1.35	
Blairstown	.....	.....	.....	1.93	
Boonton	97	45	72.6	2.64	
Bridgeton	97	53	76.6	2.55	
Camden	96	52	74.6	0.68	
Cape May	93	55	73.2	1.02	
Cape May C. H. †	94	50	74.2	0.93	
Charlotteburg	94	39	68.2	2.47	
Chester	91	49	70.4	2.80	
College Farm †	97	48	73.2	2.42	
Deckertown	93	42	71.8	1.93	
Dover	100	43	72.6	3.27	
Egg Harbor City	101	46	74.0	1.73	
Elizabeth †	99	49	74.2	1.65	
Englewood	97	44	72.8	2.30	
Franklin Furnace	92	45	69.0	3.06	
Freehold	94	48	72.5	0.08	
Friesburg	.....	.....	.....	0.97	
Gillette	95	42	71.3	1.15	
Hanover	93	46	70.3	2.56	
Hightstown	97	48	74.1	0.71	
Imlaystown	100	48	75.4	0.70	
Junction	.....	.....	.....	2.54	
Lambertville	99	48	73.7	0.58	
Linwood	101[i]	50[i]	74.6[i]	3.09	
Millville	103	47	76.2	2.78	
Moorestown	99	50	75.6	0.76	
Newark *a*	98	54	75.0	2.73	
Newark *b* †	97	54	74.8	2.91	
New Brunswick *a*	101	49	76.0	2.33	
New Brunswick *b*	96	48	72.2	2.38	
Ocean City	94	54	74.6	1.98	
Oceanic	97	56	76.6	1.44	
Paterson	95	51	73.8	2.39	
Perth Amboy	97	50	74.1	2.82	
Plainfield	98	50	74.6	2.08	
Rancocas	.....	.....	.....	0.54	
Readington *[1]	102	58	78.8	.....	
Rivervale	98	42	72.3	2.93	
Sergeantsville *[1]	95	55	70.4	1.45	
Somerville	102	45	74.3	2.51	
South Orange	94	51	72.6	1.81	
Staffordville	.....	.....	.....	1.37	
Toms River	105	43	74.3	1.22	
Trenton	99	58	77.0	1.21	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
New Jersey—Cont'd.	°	°	°	*Ins.*	*Ins.*
Vineland	102	47	75.1	1.65	
Woodbine	95	41	71.6	1.12	
New Mexico.					
Albert†	101	56	77.8	0.51	
Albuquerque†	94	55	75.0	0.81	
Alma†	95	58	73.3	4.88	
Aztec†	98	46	72.4	0.87	
Bernalillo†	96	42	70.4	1.17	
Bluewater†	96	35	64.0	1.20	
Buckman†	92[1]	36[1]	60.4[1]	1.04	
Chama†	99	41	67.5	0.78	
Clayton†	98	54	75.5	0.45	
Deming*[8]	99	68	82.2	1.95	
East Lasvegas†	89	50	68.3	2.13	
Eddy†	101	56	79.9	0.65	
Engle†	95	56	75.4	2.10	
Espanola†	96	48	72.2	0.71	
Fort Bayard	88	45	71.0	2.85	
Fort Wingate	99	41	69.4	2.05	
Galisteo†	95	54	74.8	1.07	
Gallinas Spring†	98	55	75.4	4.74	
Gila	99	58	77.7	3.39	
Hillsboro†	95	55	74.6	1.85	
Labello†	81	32	56.1	1.60	
Las Cruces†	90	54	75.8	0.47	
Lordsburg*[8]	96	66	78.1	2.34	
Los Lunas†	104	52	76.3	0.95	
Lower Penasco†	92	48	70.0	1.38	
Monero†	98	38	64.9	1.22	
Ocate†	90	43	65.8	3.16	
Puerto de Luna†	102	53	78.9	2.42	
Rincon†	103	58	79.2	0.31	
Roswell†	103	55	78.6	0.40	
San Marcial†	94	56	75.3	0.59	
Shattucks Ranch	93	45	69.1	1.68	
Socorro†	94	54	73.8	0.88	
Springer†	99	47	71.3	1.35	
Valley Ranch	92	47	68.0	2.13	
White Oaks†	90	50	72.1	2.22	
Winsors Ranch				2.24	
New York.					
Adams				2.60	
Addison	95	40	68.4	0.77	
Akron				3.29	
Alfred	91	38	66.0	1.11	
Angelica†	90	35	65.2	2.63	
Appleton	90	44	69.2	0.72	
Arcade	90	39	65.2	3.77	
Atlanta				2.61	
Avon	95	38	68.8	3.92	
Baldwinsville	94	47	71.1	3.06	
Bedford	91	44	69.9	3.14	
Big Sandy*[10]	86	50	69.5		
Binghamton†	95	39	68.1	1.42	
Bloomville	98	40	70.0	2.49	
Bolivar	90	36	66.0	1.35	
Boyds Corners				4.60	
Brentwood	93	49	71.9	4.30	
Brookfield	96	39	69.8	2.82	
Brooklyn	94	56	74.2	3.22	
Canton†	92	40	66.7	3.89	
Carmel	93	45	71.1	4.32	
Catskill	91	48	71.6	2.30	
Charlotte*[10]	87	46	67.0		
Cherry Creek				3.63	
Cooperstown†	89	40	66.6	3.49	
Cortland	93	36	67.6	2.15	
De Kalb Junction				3.08	
Demster				2.47	
Dryden	93	37	68.4	1.72	
Eagle Mills				3.17	
Easton				3.78	
Elka Park	88[5]	43[5]	67.1[5]	3.62	
Elmira†	96	42	71.6	0.94	
Fleming	93	46	70.4	2.72	
Fort Niagara†	93	45	71.8	1.00	
Friendship	93	33	65.6	1.88	
Fulton				2.76	
Glens Falls	92	43	68.7	2.80	
Gloversville	92	39	67.7	2.01	
Haskinsville				1.86	
Honeymead Brook	90	44	68.6	4.35	
Humphrey†	87	38	65.6	4.49	
Ithaca	94	41	69.9	2.43	
Jamestown	89	42	66.9	3.46	
Kings Station				2.19	
Lebanon Springs	93	39	68.0	4.48	
Lockport	92	45	70.4	1.86	
Lowville	89	39	66.6	2.45	
Lyons	93	46	70.0	3.05	
Madison Barracks†	91[1]	44	71.0[4]	3.70	
Malone	88	41	65.6	3.63	
Manhattan Beach†	90	51	71.2	2.92	
Mohonk Lake	89	51	67.2	2.70	
Mount Morris[4]	93	38	70.4	1.85	
Newark Valley				1.08	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
New York—Cont'd.	°	°	°	*Ins.*	*Ins.*
New Lisbon	91	33	64.8	2.45	
Niagara Falls				2.11	
North Hammond†	92	48	70.0	4.06	
Number Four†	84	36	63.2	3.47	
Ogdensburg	91	45	69.0	4.76	
Oneonta	96	40	69.4	3.61	
Oxford	95	37	67.4	2.71	
Perry City	93	35	66.8	2.54	
Pittsford	91	44	68.8	3.34	
Plattsburg Barracks†	92	44	67.4	5.95	
Port Jervis	93	42	69.6	2.51	
Potsdam	89	43	66.6	3.31	
Ridgeway				1.11	
Rome	94	43	67.8	1.92	
Romulus	95	48	70.2	3.17	
Rose†				2.68	
Saranac Lake	90	38	65.5	2.78	
Scottsville				2.44	
Setauket†	91	52	72.2	2.35	
Sherwood				2.64	
Skaneateles				4.05	
South Canisteo	92	34	65.9	1.62	
Southeast Reservoir				3.74	
South Kortright†	93	53	65.8	2.12	
Tyrone				2.18	
Varysburg	93	39	68.0	3.79	
Victor	94[1]	41[1]	69.8[1]	4.29	
Wappingers Falls	96	42	73.6	2.46	
Warwick				2.19	
Watertown	94	40	70.3	3.36	
Waverly†	96	37	70.2	1.57	
Wedgwood	96	42	70.3	1.54	
Westfield	98	47	69.0	4.05	
Westpoint†	97	47	73.0	1.96	
Willetspoint	95	52	73.0	1.64	
North Carolina.					
Asheville†	92	51	74.4	0.87	
Beaufort†	90	62	78.6	1.93	
Biltmore†	91	49	73.2	1.58	
Bryson City†				3.19	
Chapelhill†	102	52	80.0	1.28	
Edenton†	95[1]	59[1]	80.4[1]	2.17[1]	
Experimental Farm	98[6]	56[6]	78.6[6]	2.58	
Fairbluff†				5.48	
Falkland*[1]	100	64	81.4	4.90	
Fayetteville†	101	54	78.7	1.74	
Flatrock	90	49	72.4	3.12	
Goldsboro†	105	58	80.7	2.00	
Greensboro†	101	52	80.0	1.18	
Greenville				3.12	
Henderson†	104	54	79.6	1.56	
Horse Cove†	90	52	73.9	1.26	
Jacksonville†	99	53	79.8	3.04	
Jefferson†	93	43	72.4	2.58	
Lenoir*†	91	55	74.9	3.34	
Linville†	82	41	65.6	1.58	
Littleton†	104	51	78.3	3.88	
Louisburg†	103	53	79.0	1.27	
Lumberton†	101	56	80.6	4.38	
Lynn*†	92		73.6	1.35	
Marion	96	52	75.6	2.02	
Mocksville†	102	54	79.0	2.71	
Moncure†	100	51	78.2	2.63	
Monroe	98	49	78.3	1.42	
Morganton*†	95	59	77.5	1.08	
Mountairy†	97	46	74.9	3.27	
Mount Pleasant	97	52	79.1	2.86	
Murphy†				2.21	
Newbern†	98	62	80.7	3.86	
Oakridge†				0.73	
Pantego				6.30	
Pittsboro†	96	51	77.6	2.66	
Raleigh*[1]	102	63	80.4	4.20	
Rockingham†	103	54	80.6	4.42	
Roxboro†	100[5]	48[5]	78.2[4]	0.80	
Salem†	101	49	79.0	1.30	
Salisbury†	102	55	80.3	2.14	
Saxon†	105	47	79.2	1.98	
Selma	100	56	79.6	1.80	
Settle	102	52	80.2	0.80	
Skyuka	82	52	70.2	3.00	
Sloan†	99	54	79.0	1.95	
Soapstone Mount†	99	43	75.4	1.44	
Southport†	91	57	79.2	2.02	
Springhope*[1]	100	58	78.0	2.95	
Tarboro	105	52	79.6	2.09	
Waynesville†	90	52	72.0	0.79	
Weldon†	101	51	77.6	2.14	
Wilkesboro†	95	47	75.8	2.59	
Willeyton	97	54	77.2	1.86	
North Dakota.					
Amenia	93	33	63.4	1.48	
Ashley†	97	45	69.6	2.45	
Bottineau†	90	33	62.9	T.	
Buxton	88	34	63.8	1.74	
Churchs Ferry	95	32	63.6	1.33	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
North Dakota—Cont'd.	°	°	°	*Ins.*	*Ins.*
Coalharbor†	99	41	66.3	1.11	
Dickinson†	95	39	66.2	0.58	
Ellendale	96	37	67.6	1.47	
Falconer	100	31	65.1	0.63	
Fargo†	94	32	65.2	2.17	
Forman†	101	35	66.8	0.89	
Fort Berthold†	97	33	69.0	0.22	
Fort Yates†	101	40	67.8	1.00	
Gallatin†	100	29	65.0	1.10	
Grafton†	91	32	63.4	2.15	
Grand Rapids†	96	35	64.3	4.55	
Jamestown†	92	40	67.3	1.55	
Kelso†	97[5]	40[5]	69.0[5]	1.08	
Lakota†	89	33	63.0	2.45	
Langdon†	89	30	60.7	2.95	
McKinney	93	21	60.7	0.16	
Medora†	107	33	67.8	0.14	
Milton†*	94	35	62.4	2.90	
Minto†	93	34	63.2	3.50	
Napoleon†	97	36	66.3	2.48	
New England City†[4]	95	38	68.8	0.30	
Oakdale†	89	40	64.1	0.55	
Portal†	103	31	65.4	0.50	
Power†	96	36	65.6	2.02	
St. John†	85	37	62.5	0.16	
Sheyenne	98	33	64.4	0.79	
Towner†	91	33	63.1	0.71	
University†	89	38	63.7	2.53	
Valley City†	92	24	61.2	1.55	
Wahpeton†	90	36	66.6	2.66	
Wildrice†[2]			63.4	2.51	
Willow City†	94	30	63.2	T.	
Woodbridge†	89	29	61.3	0.70	
Ohio.					
Akron	92	46	70.4	1.55	
Annapolis[4]	96	38	70.2	2.07	
Ashland	92	45	69.0	3.41	
Ashtabula	95	45	70.1	2.17	
Atwater				2.12	
Auburn	92	35	67.0	4.08	
Bangorville	93	49	70.6	3.91	
Basil				3.40	
Bellefontaine	95	44	72.5	1.69	
Bement				3.74	
Benton Ridge	98	43	72.9	2.91	
Berlin Heights	96	43	72.2	3.69	
Bethany	98	50	74.4	5.49	
Bigprairie	94	44	69.0	5.79	
Binola	96	42	74.4	1.53	
Bissells				4.10	
Bladensburg	94	42	70.2	1.76	
Bloomingburg	91	48	71.4	3.36	
Bowling Green	97	41	71.2	2.44	
Bucyrus†	96	52	72.4		
Cambridge	92	42	70.2	3.48	
Camp Dennison	95	51	75.2	4.12	
Canal Dover	93	44	70.9	2.85	
Canfield				1.50	
Canton†	93	44	70.2	2.78	
Cardington				2.73	
Carrollton	94	42	69.6	3.45	
Cedarville				3.79	
Celina	94	51	72.8	5.10	
Cherryfork	100	44	75.2	3.90	
Circleville[b]	92	50	73.4	3.08	
Clarksville	93	46	73.4	5.41	
Cleveland	93	46	70.1	3.04	
Clifton	93	45	72.5	3.41	
Coalton	96	41	71.9	3.31	
Colebrook	93	40	69.7	3.97	
Dayton[a]	94	51	74.4	4.98	
Dayton[b]†				3.39	
Defiance	101	44	72.9	2.83	
Delaware†				3.53	
Demos	88	53	70.8	4.34	
Dupont	94	45	71.4	2.68	
Elyria	96	49	71.5	2.37	
Fairport Harbor*[10]	94	52	72.0		
Fayetteville	92	49	73.1	5.28	
Findlay	100	42	73.8	2.67	
Frankfort	93	46	71.9	4.01	
Garrettsville†	93	36	68.2	2.51	
Granville	94	42	71.2	3.49	
Gratiot	91	47	71.2	3.29	
Greenfield	93	52	73.6	1.35	
Greenhill	94	37	69.6	2.24	
Greenville	89	48	70.4	5.50	
Hackney	96	46	69.2	3.45	
Hanging Rock	96	50	73.1	3.87	
Hedges	97	41	70.8	3.34	
Hillhouse	93	41	68.4	4.21	
Hillsboro†	98	46	73.8	3.52	
Hiram	92	44	68.8	2.06	
Hudson	95	43	71.4	1.96	
Jacksonboro	97	51	73.0	3.80	
Kenton†	94	46	71.6	3.42	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Ohio—Cont'd.	°	°	°	*Ins.*	*Ins.*
Killbuck	94	43	69.8	2.98	
Lancaster	91	45	70.2	1.88	
Leipsic	97	41	70.3	1.97	
Levering	94	37	68.5	3.61	
Logan	97	44	72.4	1.89	
Lordstown	93	39	68.2	1.98	
McArthur	95	45	72.9	3.78	
McConnelsville †	93	46	73.0	3.11	
Marietta *a* †	.....	.....	.....	5.52	
Marion	97	44	72.4	4.16	
Medina	95	41	70.6	2.60	
Milfordton	95	44	69.9	3.65	
Milligan	98	47	74.4	1.88	
Milliport	90	54	74.6	3.61	
Montpelier	96	44	70.8	6.39	
Napoleon	97	43	70.8	1.59	
Neapolis	.....	.....	.....	4.20	
New Alexandria	90	46	70.0	3.25	
New Berlin	96	42	70.4	2.78	
New Bremen	95	42	72.5	1.72	
New Comerstown	95	45	70.8	3.69	
New Holland	94	47	73.4	3.52	
New Moscow	.....	.....	.....	3.25	
New Paris	95	47	74.6	9.35	
New Waterford	93	40	69.4	3.24	
North Lewisburg	97	43	72.6	2.35	
North Royalton	95	43	71.2	3.47	
Norwalk	98	36	68.0	2.00	
Oberlin	95	42	70.3	2.09	
Ohio State University	92	46	71.8	1.75	
Orangeville	94	37	68.2	1.75	
Ottawa	102	43	73.2	3.55	
Pataskala †	95	45	72.2	4.69	
Peoli	95	48	71.4	3.08	
Perry	.....	.....	.....	2.27	
Philo	95	46	71.9	2.98	
Plattsburg	91	45	71.8	3.71	
Pomeroy	98	49	74.0	3.51	
Portsmouth *a* †	.....	.....	.....	3.64	
Portsmouth *b*	99	48	75.4	3.53	
Richwood	.....	.....	.....	2.44	
Ridgeville Corners	96	43	70.5	1.96	
Ripley	92	50	73.1	4.94	
Rittman	93	38	67.6	2.85	
Rockyridge	100	46	73.4	1.60	
Rosewood	91	44	70.2	2.54	
Sharon Center	.....	.....	.....	3.26	
Shenandoah	97	43	70.1	3.25	
Sidney *b*	96	50	73.0	4.01	
Sinking Spring †	92	51	73.4	5.12	
Springboro	.....	.....	.....	6.28	
Spring Valley	95	45	72.5	4.91	
Strongsville	.....	.....	.....	1.60	
Sylvania	96	42	70.4	4.73	
Thurman	102	47	75.7	4.19	
Tiffin †	95	48	71.6	3.49	
Upper Sandusky	94	43	71.0	3.59	
Urbana	89	47	70.4	3.20	
Vanceburg	94	51	74.6	5.05	
Van Wert	94	45	71.3	4.13	
Vermilion	93	44	69.7	3.12	
Vickery	96	42	70.6	2.10	
Walnut	.....	.....	.....	2.76	
Warren	96	38	69.0	2.80	
Warsaw	97	45	72.6	2.34	
Wauseon	97	44	71.6	4.24	
Waverly	99	48	75.3	4.21	
Waynesville	96	47	74.0	4.47	
Westerville	91	48	70.6	3.43	
Willoughby	.....	.....	.....	1.79	
Wooster *a*	93	41	68.5	1.96	
Youngstown	94	44	69.9	2.23	
Oklahoma.					
Alva †	112	52	83.5	0.90	
Anadarko †	.....	.....	.....	0.50	
Arapaho †	108	53	84.2	1.26	
Beaver †	107	50	83.0	0.34	
Buffalo †	104	60	81.8	1.40	
Burnett †	107	53	84.0	1.18	
Clifton †	113	48	84.7	1.96	
Edmond	.....	.....	.....	1.40	
Fort Reno †	107	55	83.5	3.30	
Fort Sill	109	56	85.1	1.66	
Guthrie †	105	54	83.4	1.57	
Hennessey †	.....	.....	.....	0.85	
Keokuk Falls †	109	60	84.2	1.55	
Mangum †	105	60	84.0	0.95	
Norman †	112	53	86.2	1.28	
Ponca †	107	50	78.4	0.40	
Pondcreek †	110	48	83.6	0.72	
Prudence †	108	49	85.0	0.38	
Sac and Fox Agency †	108	50	84.0	0.95	
Stillwater †	106	53	82.7	1.64	
Winnview †	107	54	84.9	1.33	
Woodward †	.....	.....	.....	1.00	
Oregon.					
Albany *a* †	95	46	66.3	0.58	
Arlington †	94	53	71.1	0.16	
Ashland *b*	100	43	68.6	0.43	
Aurora [*5]	96	57	69.8	0.88	
Aurora (near)	93	47	64.6	1.40	
Bandon	70	46	61.0	0.54	
Bay City †	82	49	61.6	1.72	
Brownsville [*5]	95	56	68.5	1.45	
Burns †	95	29	64.8	.....	
Cascade Locks	90	52	67.0	0.65	
Comstock [*5]	97	48	65.1	1.41	
Corvallis *a*	96	47	65.6	1.16	
Dayville †	95	41	67.5	0.57	
Detroit †	96	42	64.8	1.80	
Eugene † *a*	94	49	65.4	1.87	
Falls City	.....	.....	.....	0.99	
Fife †	90	34	62.4	0.60	
Fort Klamath	88	29	59.8	0.06	
Gardiner	83	52	61.9	1.58	
Glenora	96	44	64.2	1.92	
Grants Pass *a* †	103	43	69.2	0.73	
Happy Valley †	90	33	62.6	1.51	
Heppner †	94	53	71.1	0.16	
Hood River (near)	90	48	67.3	0.22	
Hubbard	95	41	64.1	1.15	
Irvington	.....	.....	.....	1.13	
Jacksonville	94	45	68.8	0.45	
Joseph †	86	39	64.0	0.99	
Junction City [*5]	94	52	66.9	0.60	
Lafayette [*5]	97	52	69.0	0.36	
Lakeview †	89	34	64.0	0.51	
Langlois	81	50	65.8	1.28	
Lorella	98	41	67.8	0.00	
McMinnville *a* †	97	47	65.7	1.57	
Merlin [*5]	102	50	71.0	0.00	
Monmouth [*5]	95	56	69.9	0.43	
Mount Angel † *a*	100	50	68.0	1.15	
Nehalem	.....	.....	.....	2.14	
Newberg	100	46	64.8	1.84	
Newbridge	102	45	71.9	0.07	
Newport	76	48	59.0	1.85	
Pendleton	99	38	69.9	1.19	
Riddles [*5]	94	50	66.6	0.05	
Salem *b* †	91	48	65.6	1.00	
Salmon	86	35	57.2	2.98	
Sheridan [*5]	97	53	69.1	1.59	
Silver Lake	94	30	67.2	0.39	
Silverton [*5]	94	54	65.2	1.82	
Siskiyou [*5]	92	50	70.0	1.50	
Sparta	94	40	67.3	0.67	
Springfield [*5]	93	55	66.0	2.09	
Stafford	97	47	67.0	0.93	
The Dalles †	95	46	70.6	0.28	
Tillamook Rock L H †	.....	.....	.....	1.71	
Toledo	100	44	60.0	0.24	
Umatilla †	.....	.....	.....	0.93	
Vale	99	37	68.6	0.39	
West Fork [*5]	102	52	69.3	0.65	
Weston	93	38	67.4	1.63	
Williams	95	41	66.3	0.31	
Pennsylvania.					
Altoona	95	46	72.1	1.70	
Aqueduct	101	44	74.2	2.00	
Beaver Dam †	.....	.....	.....	4.64	
Bethlehem	.....	.....	.....	2.22	
Blooming Grove	99	39	69.3	2.71	
Brookville †	.....	.....	.....	3.58	
Browers Lock	.....	.....	.....	0.74	
Cameron	.....	.....	.....	1.85	
Canonsburg	89	48	72.6	1.15	
Carlisle	100	44	73.7	0.78	
Cassandra	93	43	70.8	3.58	
Cedarrun	.....	.....	.....	1.57	
Centerhall †	93	43	70.6	1.26	
Chambersburg †	95	42	71.4	0.99	
Coatesville	99	45	73.9	0.63	
Confluence †	94	44	70.8	2.47	
Coopersburg	93	48	73.0	0.66	
Davis Island Dam †	.....	.....	.....	3.31	
Doylestown	.....	.....	.....	1.32	
Drifton	89	47	68.2	.....	
Driftwood	.....	.....	.....	2.40	
Dubois †	.....	.....	.....	3.79	
Duncannon	.....	.....	.....	1.51	
Dyberry †	95	35	66.2	1.40	
East Bloomsburg	.....	.....	.....	2.69	
East Mauch Chunk	98	41	71.4	2.85	
Easton	96	48	72.5	3.47	
Edinboro [*1]	90	42	67.1	.....	
Ellwood Junction †	.....	.....	.....	2.99	
Emporium	90	43	68.2	1.62	
Farrandsville	.....	.....	.....	3.34	
Forks of Neshaminy [*1]	92	54	74.7	0.83	
Frederick	.....	.....	.....	0.66	
Freeport †	.....	.....	.....	2.66	
Girardville	.....	.....	.....	1.28	
Pennsylvania—Cont'd.					
Grampian	92	42	69.7	3.98	
Greensboro †	98	48	73.0	1.93	
Hamburg	99	45	74.2	1.96	
Hollidaysburg	98[b]	40[b]	72.3[b]	1.76	
Honesdale	101	43	71.6	1.68	
Huntingdon *a* †	96	43	71.0	2.46	
Huntingdon *b*	.....	.....	.....	2.29	
Indiana [f]	90	45	69.8	.....	
Johnstown †	.....	.....	.....	4.00	
Karthaus	.....	.....	.....	1.65	
Keating	.....	.....	.....	3.29	
Kennett Square	97	46	73.6	0.91	
Lancaster	90	46	71.0	.....	
Lansdale	.....	.....	.....	0.73	
Lebanon	96	43	73.1	0.56	
Leroy †	93	44	69.2	2.22	
Lewisburg	95	40	71.2	1.39	
Lock Haven *a* †	97[1]	46[1]	72.4[1]	3.93	
Lock Haven *b*	....	....	.....	3.59	
Lock No. 4 †	.....	.....	.....	2.37	
Lycippus	90	50	71.2	4.48	
Mifflin	.....	.....	.....	0.59	
Oil City †	.....	.....	.....	2.16	
Ottsville	.....	.....	.....	0.45	
Parker †	.....	.....	.....	5.01	
Philadelphia *b*	98	58	76.2	0.85	
Point Pleasant	.....	.....	.....	3.20	
Pottstown	98	48	74.6	0.55	
Quakertown	96	42	71.4	0.67	
Reading [2]	.....	.....	73.6	0.48	
Renovo *a*	.....	.....	.....	4.47	
Renovo *b*	93	41	70.4	4.12	
Ridgway †	.....	.....	.....	2.45	
Saegerstown	95	35	66.4	3.29	
St. Marys	90	36	67.0	2.83	
Salem Corners	96	44	70.6	3.93	
Scranton	95	41	70.2	2.50	
Seisholtzville	.....	.....	.....	1.75	
Selinsgrove	98	41	71.8	2.18	
Shawmont	.....	.....	.....	1.14	
Shinglehouse	93	40	66.3	.....	
Sinnamahoning	.....	.....	.....	1.39	
Smethport	91	39	66.2	2.27	
Smiths Corners	.....	.....	.....	2.20	
Somerset	94	38	67.8	1.75	
South Bethlehem [*1]	98	56	73.7	.....	
South Eaton	91	39	68.5	3.06	
State College	93	45	69.8	1.56	
Sunbury	.....	.....	.....	1.35	
Towanda	94	39	69.0	2.97	
Uniontown	92	45	71.2	2.82	
Warren †	90	41	67.2	2.99	
Wellsboro [*†1]	93	35	64.6	0.88	
West Chester	95	52	74.2	0.95	
West Newton †	.....	.....	.....	6.53	
White Haven [*1]	100	50	71.9	2.44	
Wilkesbarre †	97	43	71.6	2.99	
Williamsport	93	45	70.4	2.96	
York †	97	43	73.2	1.05	
Rhode Island.					
Bristol	88	53	69.9	3.19	
Kingston	91	45	69.3	3.67	
Lonsdale	.....	.....	.....	2.52	
Pawtucket	96	50	72.0	3.13	
Providence *c*	96	50	71.5	2.62	
South Carolina.					
Allendale †	102	54	81.2	6.24	
Anderson †	.....	.....	.....	1.11	
Batesburg †	100	57	78.6	3.85	
Blackville †	101	57	81.9	2.74	
Camden †	.....	.....	.....	2.68	
Central †	99	52	80.5	1.07	
Cheraw *a* †	102	54	79.3	3.93	
Cheraw *b* †	.....	.....	.....	4.27	
Clemson College	100	56	81.3	1.02	
Conway †	.....	.....	.....	5.84	
Darlington (near)	.....	.....	.....	4.06	
Edisto †	.....	.....	.....	3.05	
Effingham †	.....	.....	.....	5.94	
Florence †	100	56	80.8	3.93	
Georgetown †	96	59	80.4	4.75	
Gillisonville †	105	53	81.7	3.97	
Greenville †	95	58	78.0	2.27	
Greenwood †	94	66	79.8	2.62	
Holland †	102	56	80.5	4.12	
Kingstree *a* †	100	57	81.3	10.14	
Kingstree *b* †	.....	.....	.....	10.21	
Little Mountain	101	56	82.0	3.37	
Longshore †	95	58	79.3	2.94	
Mount Carmel †	.....	.....	.....	4.36	
Pinopolis [*1]	92	63	78.0	8.08	
Port Royal †	96	63	82.2	4.46	
St. Georges †	98	57	80.5	3.99	
St. Matthews †	100	58	80.6	3.86	
St. Stephens †	.....	.....	.....	5.93	
Santuck †	97	53	79.2	2.63	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
South Carolina—Cont'd.	°	°	°	*Ins.*	*Ins.*
Shaws Fork *[1]	102	68	82.8	6.83	
Smiths Mills†	.....	.....	.....	8.46	
Society Hill†	94	58	78.6	3.07	
Spartanburg†	103	57	82.1	2.50	
Statesburg†	94	58	79.7	2.07	
Trenton	97	64	81.9	2.94	
Trial†	96	56	79.7	5.66	
Walhalla†	92	60	78.5	2.34	
Winnsboro	98	59	79.9	1.05	
Yemassee†	104	55	81.9	6.83	
Yorkville	98	58	80.0	2.47	
South Dakota.					
Aberdeen†	101	38	70.2	2.55	
Alexandria†	105	40	71.6	1.38	
Armour†	102	44	71.6	2.08	
Ashcroft†	98	36	67.4	0.99	
Canton†[1]	100	29[p]	68.4	0.80	
Castlewood†	101	30	68.0	1.13	
Chamberlain†	105	46	73.8	1.06	
Clark†	98	41	67.2	1.45	
Cross†	94	37	64.3	0.82	
Edgemont	.....	.....	.....	0.47	
Farmingdale	.....	.....	.....	0.18	
Faulkton *a†	98	40	68.6	0.77	
Faulkton *b†	99	41	68.0	0.81	
Flandreau†	100	40	69.8	1.16	
Forestburg†	103	38	71.6	0.96	
Forest City†	100	45	71.7	2.70	
Fort Meade†	102	50	73.6	0.05	
Gary†	102	45	69.9	0.63	
Goudyville *†[1]	98	47	68.4	1.50	
Greenwood†	103	44	73.0	1.55	
Hitchcock	.....	.....	.....	1.18	
Hotch City†	104	41	72.2	1.10	
Howard†	100	38	69.8	0.56	
Kimball†	.....	.....	.....	2.01	
Leslie†	106	45	74.0	2.23	
Mellette†	100	46	72.2	0.62	
Menno†	102	40	74.2	1.36	
Millbank†	102	41	69.2	2.21	
Mitchell†	100	40	71.2	0.96	
Nowlin†	109	38	73.8	0.06	
Oelrichs†	101	40	72.2	0.10	
Parker†	98	38	71.2	0.81	
Parkston†	101	37	67.8	1.40	
Plankinton†	102	41	71.4	1.62	
Rochford	.....	.....	.....	0.57	
Rosebud†	100	37	70.6	1.61	
St. Lawrence†	100	43	71.6	1.12	
Shiloh†	100	36	70.7	0.88	
Silver City	.....	.....	.....	0.80	
Sioux Falls†	100	35	71.2	1.17	
Tyndall†	105	42	71.9	1.12	
Watertown†	96[l]	31[i]	65.9[l]	1.88	
Webster†	100	33	64.8	3.23	
Wentworth†	99	42	69.0	1.99	
Wessington Springs†	98	43	70.6	1.27	
Yankton†	100	43	72.2	1.83	
Tennessee.					
Andersonville *[1]	93	56	75.4	0.73	
Arlington†	102	52	80.8	1.30	
Ashwood *†[1]	98	54	79.9	1.88	
Benton (near)†	99	59	79.7	2.56	
Bolivar†	102	52	80.2	0.66	
Bristol†	92	53	73.5	7.63	
Brownsville†	101	53	79.4	1.23	
Byrdstown†	93	50	75.7	1.77	
Carthage†	.....	.....	.....	1.16	
Clinton†	.....	.....	.....	0.15	
Covington†	105	52	81.4	2.14	
Decatur†	97	56	74.6	1.68	
Dyersburg†	103	56	81.6	1.75	
Elizabethton†	97	54	77.0	0.89	
Elk Valley *[1]	88	51	73.9	2.57	
Fairmount *[1]	88[c]	62	75.4	0.07	
Florence†	94	54	77.8	2.05	
Greeneville†	92	55	74.8	2.36	
Hohenwald *†[3]	.....	56	73.0	2.17	
Jackson†	99	52	79.6	0.95	
Johnsonville†	102	52	79.4	2.91	
Jonesboro *†[1]	88	56	74.0	2.76	
Liberty†	95	51	77.8	1.67	
Loudon†	.....	.....	.....	1.75	
Lynnville *[1]	96	60	77.7	2.22	
McMinnville†	94	53	77.2	1.18	
Milan†	101	56	80.8	1.93	
Molino *†	101	57	79.8	1.28	
Newport†	95	55	77.7	1.78	
Nunnelly *[1]	96	57	77.9	1.48	
Palmetto†	99	52	80.3	1.18	
Pope *[1]	101	54	78.6	0.34	
Riddleton†	96	52	79.6	1.18	
Rockwood†	.....	.....	.....	0.93	
Rogersville†	90	56	74.6	1.85	
Rugby *[1]	96	55	74.4	0.35	
St. Joseph†	103	49	79.7	1.07	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Tennessee—Cont'd.	°	°	°	*Ins.*	*Ins.*
Savannah†	100	57[c]	82.7	2.51	
Sewanee†	89	57	76.0	1.39	
Springdale *[1]	97	58	78.8	1.15	
Tellico Plains†	97	56	79.4	2.03	
Trenton	98	53	78.4	4.24	
Tullahoma†	95	53	76.6	1.85	
Union City†	98	53	78.2	2.37	
Waynesboro *[1]	98	51	77.2	1.65	
Texas.					
Albany *†[1]	92	60	79.1	1.59	
Arthur City†	.....	.....	.....	2.30	
Austin *b *[2]	99	60	83.9	.....	
Ballinger†	102	61	82.7	1.47	
Beeville†	102	64	85.4	1.52	
Blanco†	100	.....	.....	T.	
Boerne *†[1]	98	67	83.8	0.62	
Brady†	102	64	83.2	2.62	
Brazoria†	95	64	82.4	1.93	
Brenham†	100	64	85.7	1.46	
Brighton†	92[l]	67[l]	83.1[l]	0.26	
Brownwood *†[1]	102	67	86.4	2.70	
Burnet *†[1]	100	64	84.1	1.11	
Camp Eagle Pass†	104	70	87.9	0.05	
Coleman *[2]	.....	66	80.5	4.01	
College Station	99	63	84.3	0.60	
Colmesneil	.....	.....	.....	3.33	
Columbia†	94	59	84.4	2.68	
Corsicana *b†	105	61	85.7	0.25	
Cuero†	99	62	85.0	1.22	
Dallas†	105	60	84.4	1.85	
Danevang†	100	59	83.4	1.11	
Dean†	99	50	76.6	1.14	
Dublin†	104	63	83.6	4.55	
Duval *[1]	105	69	88.2	T.	
Estelle†	106	62	85.6	2.52	
Forestburg†	106	62	85.1	1.40	
Fort Brown†	100	63	85.2	0.16	
Fort Clark	103	70	86.3	0.59	
Fort McIntosh	102	69	86.6	0.69	
Fort Ringgold†	104	65	86.4	0.22	
Fort Stockton†	.....	.....	.....	1.18	
Fort Worth†	107[f]	63[f]	84.6[f]	4.78	
Fredericksburg *†[1]	98[c]	64[c]	80.1[c]	1.53	
Gainesville†	106	62	85.8	2.23	
Georgetown *[1]	98	58	82.9	T.	
Golindo	.....	.....	.....	0.55	
Graham†	106	58	85.8	2.88	
Grapevine†	106	51	84.4	3.86	
Hale Center†	96	59	77.2	0.50	
Hallettsville†	102	60	85.3	0.85	
Haskell†	108	56	83.4	1.90	
Hearne†	105	68	86.1	0.25	
Henrietta†	111	62	88.2	0.84	
Hewitt	.....	.....	.....	0.85	
Houston†	96	65	84.8	2.38	
Huntsville†	102	58	84.8	0.92	
Kent	.....	.....	.....	2.04	
Kerrville†	101	57	82.2	0.47	
Lampasas†	104	59	83.6	3.25	
Llano *†[5]	101	67	86.0	1.50	
Longview†	107	56	86.0	1.08	
Lufkin†	108	56	86.7	0.43	
Luling†	100	62	85.5	0.26	
Mann†	107[l]	62[k]	87.9[l]	0.09	
Marathon†	98	61	76.6	T.	
Marshall†	104	61	85.6	1.47	
Menardville *†[1]	102	62	81.4	1.85	
Mount Blanco†[1]	100[c]	54	80.0	0.11	
New Braunfels†	99	62	84.2	T.	
Orange†	95	59	81.0	0.08	
Panter†	.....	.....	.....	3.70	
Paris†	108	66	86.1	1.56	
Point Isabel *[1]	94	78	84.4	T.	
Rheinland†	107	62	86.3	0.59	
Roby†	103	58	83.3	1.66	
Rockport *[1]	94	74	80.2	.....	
Rocksprings†	.....	.....	.....	1.61	
Round Rock *†[5]	99	73	90.5	0.00	
Runge†	104	62	85.6	0.91	
San Antonio	100	67	86.1	2.88	
San Marcos *a†	.....	.....	.....	0.45	
San Marcos *b†	100	60	84.2	0.35	
Sierra Blanca†	98	54	76.6	0.93	
Stafford†	.....	58	.....	2.03	
Sulphur Springs†	109	55	87.4	0.23	
Temble *a†	101	67	85.6	0.32	
Temple *b†	101	67	86.2	0.40	
Tulia†	108	51	78.0	0.76	
Tyler†	103	63	83.2	0.56	
Valentine†	102	55	76.8	1.11	
Victoria	.....	.....	.....	1.23	
Waco†	103	63	87.0	1.46	
Weatherford†	105	62	85.1	1.05	
Wichita Falls†	.....	.....	.....	0.36	
Utah.					
Alpine City†	.....	.....	.....	0.81	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Utah—Cont'd.	°	°	°	*Ins.*	*Ins.*
Blue Creek *[2]	98	62	77.1	.....	
Brigham City†	.....	.....	.....	0.69	
Cisco†	104	49	75.8	0.84	
Corinne *[2]	98	57	78.4	0.15	
Fillmore†	105	47	74.4	1.69	
Fort Duchesne†	96	45	69.2	0.64	
Giles†	106	46	75.6	0.78	
Grover†	92	39	65.4	1.02	
Heber†	98	36	64.0	0.55	
Huntsville†	.....	.....	.....	0.45	
Kelton *[2]	94	53	74.9	0.15	
Koosharem	88	38	63.0	1.43	
Levan†	95	46	69.4	0.71	
Loa†	93	37	64.3	1.94	
Logan†	92	49	70.3	1.49	
Mammoth†	97	52	71.3	0.18	
Manti†	106	38	71.4	0.43	
Millville†	.....	.....	.....	1.15	
Moab†	96	51	75.0	0.51	
Mount Pleasant *†[1]	95	55	71.4	0.87	
Ogden *[2]	97	60	77.3	0.28	
Pahreah†	93	50	70.2	1.90	
Park City†	83	43	62.0	0.05	
Parowan†	96	45	69.7	3.00	
Promontory *[1]	97	58	79.8	0.00	
St. George†	107	47	77.0	2.59	
Scipio†	94	40	69.2	1.59	
Snowville†	93	42	67.3	0.63	
Soldier Summit†	93	33	61.9	0.49	
Terrace *[2]	103	60	78.7	0.30	
Thistle†	97	44	66.8	0.63	
Tooele†	95	53	72.0	0.93	
Vernal†	90	47	69.3	0.58	
Vermont.					
Brattleboro	92	43	70.8	2.22	
Burlington†	94	52	70.2	4.09	
Chelsea†	87	39	63.7	2.33	
Cornwall	91	43	68.2	4.37	
Enosburg Falls† *	87	40	64.5	2.84	
Hartland†	90	38	64.8	3.63	
Jacksonville	90	34	63.2	2.76	
Norwich	92	36	65.4	3.82	
St. Johnsbury	89	41	65.8	3.36	
Strafford *†[1]	87	46	65.3	3.06	
Vernon *[2]	95	47	71.8	2.32	
Wells	90	42	67.1	4.99	
Woodstock	93	39	67.1	3.52	
Virginia.					
Alexandria *[1]	103	59	78.5	1.15	
Alleghany *[1]	91	53	72.4	.....	
Ashland†	98	46	75.6	1.46	
Bedford City	.....	38	.....	3.55	
Bigstone Gap†	90	45	71.4	5.50	
Birdsnest *†[1]	93	62	78.7	0.10	
Blacksburg	92	43	70.7	3.84	
Buckingham†	100	46	76.4	2.27	
Burkes Garden	91	40	67.2	3.45	
Callaville†	97	49	76.9	1.63	
Cape Charles†	98	55	78.8	3.96	
Christiansburg†	.....	.....	.....	1.21	
Clarksville†	.....	.....	.....	0.28	
Clifton Forge*	100	47	74.4	.....	
Dale Enterprise†	96	43	71.3	1.55	
Danville†	.....	.....	.....	0.94	
Fredericksburg†	98	50	77.2	1.28	
Grahams Forge †[b]	89	46	72.2	3.95	
Guinea	97	.....	.....	5.29	
Hampton	96	63	79.7	2.13	
Hot Springs	87	45	67.6	4.16	
Lexington†	94	48	74.1	5.65	
Manassas†	98	47	75.4	2.63	
Marion †	91[l]	49[l]	72.5[l]	4.76	
Monterey†	93	42	66.8	2.69	
Nottoway †	105	48	79.1	5.37	
Petersburg†	99	50	78.2	0.70	
Quantico	100	47	76.2	.....	
Richmond	94	50	77.4	.....	
Richmond (near)†	103	52	79.8	1.26	
Rockymount†	94	50	76.0	2.61	
Rural Retreat	89	43	70.2	2.83	
Salem†	96	53	76.4	1.41	
Saltville	92	47	73.2	6.00	
Smithville†	95	60[l]	79.0	1.93	
Spottsville†	100	49	77.9	1.76	
Stanardsville†	97	50	74.1	2.97	
Stanleyton †.	96	49	73.6	2.76	
Staunton†	99	47	73.6	3.92	
Stephens City†	97	46	74.4	2.14	
Sunbeam†	95	55	77.4	5.34	
Warsaw†	96	50	77.0	0.90	
Wytheville†	89	46	70.2	4.22	
Washington.					
Anacortes	.....	.....	.....	1.10	
Ashford†	.....	.....	.....	2.38	
Blaine†	83	38	58.7	0.95	
Cascade Tunnel†	95	30	68.5	0.09	

TABLE II.—*Meteorological record of voluntary and other cooperating observers*—Continued.

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Washington—Cont'd.	°	°	°	*Ins.*	*Ins.*
Centerville†	102	36	67.9	0.51	
Chehalis†	93	48	67.4	0.59	
Colfax†	91	37	64.4	1.44	
Connell†	100	46	71.8	.....	
Coupeville†	82	47	60.2	1.12	
Eastsound†	78	48[4]	61.2	0.30	
Ellensburg (near)	92	42	68.8	0.10	
Fort Simcoe†	104	46	72.0	0.54	
Fort Spokane	99	36	68.2	0.83	
Grandmound†	93	43	64.6	0.48	
Kennewick†	97	45	72.8	0.05	
Lakeside†	94	51	70.8	0.67	
Loomis†	93	48	71.4	0.63	
Madrone*†‖	85	46	62.2	0.23	
Mayfield†	92	47	64.6	1.78	
Montecristo†	91	42	62.7	1.29	
Moxee Valley†	98	39	70.6	0.40	
New Whatcom†	82	43	62.4	0.68	
Olga†	81	45	58.8	0.43	
Olympia†	93	43	63.6	0.83	
Pine Hill†	93	44	65.5	0.62	
Pomeroy†	94	54	74.2	1.39	
Pullman†	95	38	66.6	1.21	
Queets†	90	45	62.4	1.44	
Rosalia†	92	39	66.1	1.60	
Sedro†	83*	47*	63.6*	0.90	
Silvercreek*‖	94	47	62.3	1.98	
Snohomish†	87	45	63.4	0.35	
Stampede†	90	45	62.4	1.19	
Stillaguamish†	87	43	61.6	0.37	
Sunnyside†	97	45	72.0	0.71	
Tacoma†	86	49	62.4	0.63	
Union City†	92	45	65.0	0.88	
Vashon†	82	50	62.2	0.44	
Waterville†	91	38	67.6	0.85	
Wenatchee Lake†	88	35	60.6	0.10	
West Virginia.					
Beckley	94	46	72.4	2.89	
Beverly†	94	48	72.8	3.26	
Bloomery†	95	40	68.4	1.45	
Bluefield†	93	46	72.8	5.69	
Buckhannon *a*†	.....	.....	.....	1.91	
Buckhannon *b*†	90	44	69.9	.....	
Burlington†	93	43	71.2	2.69	
Charleston†	.....	.....	.....	4.63	
Dayton†	.....	.....	.....	2.20	
Elkhorn†	90	49	71.6	4.59	
Fairmont†	.....	.....	.....	2.64	
Glenville†	91	49	72.0	2.17	
Grafton†	94	45	71.8	2.22	
Green Sulphur	93	47	74.2	1.10	
Harpers Ferry†	.....	.....	.....	0.88	
Hewett†	96	53	75.1	3.48	
Hinton *a*†	.....	.....	.....	2.08	
Hinton *b*†[6]	94	49	74.2	.....	
Marlinton†	89	42	68.7	3.28	
Martinsburg†	96	46	73.6	1.03	
Morgantown *a*†	.....	.....	.....	2.74	
New Martinsville†	95	50	74.2	2.26	
Nuttallburg†	88	43	69.0	3.40	
Oldfields†	96[5]	44	72.5[6]	2.80	
Pennsboro	96	44	75.2	2.39	
Philippi†	95	52	74.4	2.70	
Point Pleasant†	96	50	75.4	5.05	
Powellton†	.....	.....	.....	2.52	
Rowlesburg†	.....	.....	.....	1.18	
Sandyville†	93	45	72.3	2.49	
Spencer†	.....	.....	.....	2.70	
Tannery*‖	93	43	66.8	.....	
Weston *a*†	.....	.....	.....	3.86	
Weston *b**‖	94	52	74.7	.....	
Wheeling *a*†	.....	.....	.....	1.57	
Wheeling *b*†	96	51	74.4	2.17	
White Sulphur Springs†	95	40	71.5	3.80	
Wisconsin.					
Amherst	94	39	67.6	2.73	
Antigo†	93	32	63.7	6.32	
Apollonia*†‖	98	36	71.0	3.94	
Bayfield†	94	43	71.6	1.00	
Beloit	95	44	71.8	2.64	
Black River Falls†	99	.....	.....	3.07	
Boscobel†	96	42	69.6	2.79	
Centralia	98	39	69.8	1.23	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Wisconsin—Cont'd.	°	°	°	*Ins.*	*Ins.*
Chilton	95	.....	.....	2.37	
Citypoint	96	33	67.2	2.23	
Crandon†	94	.....	.....	2.16	
Delavan†	94	40	70.4	1.44	
Depere†	94	44	69.7	3.21	
Dodgeville†	96	37	67.6	1.91	
Easton*†‖	94	46	70.1	1.93	
Eau Claire	98	40	69.7	3.00	
Florence†	91	31	64.2	4.92	
Grand River Lock	.....	.....	.....	1.93	
Grantsburg†	98	33	64.4	1.53	
Gratiot†	96	40	71.8	0.75	
Hartford	.....	.....	.....	2.39	
Harvey†	96	45	70.7	3.07	
Hayward†	92	31	65.6	1.57	
Hillsboro	98	36	68.0	2.15	
Koepenick*†‖	90	52	63.7	3.90	
Lancaster†	97	45	70.6	1.73	
Lincoln†[2]	.....	.....	70.8	2.61	
Madison†	90	51	71.0	2.48	
Manitowoc†	94	47	69.2	1.98	
Meadow Valley†	96	37	67.8	1.82	
Medford†	100	34	68.0	3.18	
Menasha	.....	.....	.....	2.66	
Neillsville†	96	36	68.4	4.96	
New Holstein†	97	45	70.0	1.22	
New London	91	42	68.5	1.14	
Oconomowoc†	95	45	70.1	2.30	
Oconto	95	40	69.1	2.35	
Osceola†	102	32	67.5	4.38	
Oshkosh†*	95	48	71.4	0.72	
Pepin	99*	36*	66.1*	1.40	
Pine River†	95	42	70.8	2.24	
Portage†	97	45	69.4	2.31	
Port Washington	100	45	68.7	1.49	
Prairie du Chien	102	35	69.6	2.82	
Racine	97	48	72.2	1.02	
Sharon†	97	42	68.8	1.07	
Shawano	93	40	67.8	5.03	
Spooner†	99	30	67.5	1.52	
Stevens Point†	97	40	69.0	3.49	
Sturgeon Bay Canal*[10]	88	46	65.8	.....	
Valley Junction†	97	36	67.2	1.73	
Viroqua	97	43	69.2	2.48	
Watertown†	95	45	70.7	2.40	
Waukesha†	97	49	69.8	2.67	
Waupaca†	96	42	70.0	1.68	
Wausau†	94	40	67.4	5.84	
Westbend	98	44	69.8	2.18	
Westfield†	94	40	69.8	1.32	
Wyoming.					
Bighorn Ranch†	81	31	58.4	0.90	
Fort Laramie†[b]	101	39	72.1	1.00	
Fort Washakie†	91	39	64.6	1.19	
Fort Yellowstone†	86	30	60.4	0.37	
Laramie	84	36	62.0	0.89	
Lusk†	98	38	69.2	0.59	
Sheridan	95	37	65.4	T.	
Sundance	95	41	66.6	0.53	
Wheatland†	101	25	69.0	2.19	
Mexico.					
Ciudad P. Diaz	99	75	87.6	T.	
Leon de Aldamas	86	54	70.6	1.82	
Mexico	78	50	64.4	2.54	
Puebla	82	50	66.9	2.30	
Topolobampo*‖	96	78	85.5	3.14	
New Brunswick.					
St. John	77	48	60.6	1.88	
West Indies.					
Grand Turk Island	.....	.....	.....	0.81	

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Alaska.					
Coal Harbor	73	40	51.2	3.93	
Arizona.					
Lochiel	.....	.....	.....	6.35	
Colorado.					
Arkins	.....	.....	.....	2.58	
Cope[b]	95	57	77.4	1.18	
Sherwood Ranch	87	37	61.1	.....	

Stations.	Temperature. (Fahrenheit.) Maximum.	Minimum.	Mean.	Precipitation. Rain and melted snow.	Total depth of snow.
Illinois.	°	°	°	*Ins.*	*Ins.*
Aurora *b*	97	43	72.3	5.60	
Louisiana.					
Calhoun	104	60	86.4	0.28	
Paincourtville	96	67	82.2	1.94	
Maryland.					
Denton	91	54	75.6	4.54	
Mount St. Marys Col.[9]	95[6]	56	73.5	6.07	
Pocomoke City	94	57	79.3	5.26	
Massachusetts.					
Plymouth*‖	92	60	72.4	2.27	
Nebraska.					
Ashland *b**‖	100	52	77.2	5.41	
Curtis *b**‖	110	60	79.8	4.75	
Grand Island *a**‖	104	58	78.3	3.01	
Imperial *b*	.....	.....	.....	2.76	
Loup *a**‖	100	56	77.9	3.18	
Tecumseh *b*	.....	.....	.....	4.62	
Ohio.					
Bucyrus*	92	50	74.2	4.93	
Oklahoma.					
Edmond	.....	.....	.....	2.07	
Pennsylvania.					
Dyberry	91	44	69.2	4.44	
Rhode Island.					
Providence *a*	94	57	75.2	1.34	
Providence *c*	92	54	72.4	1.38	
South Dakota.					
Aberdeen	105	46	72.6	1.64	
Washington.					
Pine Hill	100	50	72.8	T.	
Waterville	99	33	67.3	0.00	
Wenatchee Lake	92	43	67.2	T.	

EXPLANATION OF SIGNS.

* Extremes of temperature from observed readings of dry thermometer.

† Weather Bureau instruments.

‡ Record furnished by the Arrowhead Reservoir Company, in the San Bernardino Mountains, San Bernardino County, Cal., at elevations varying from 4,900 to 6,900 feet.

A numeral following the name of a station indicates the hours of observation from which the mean temperature was obtained, thus:

[1] Mean of 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. ÷ 4.

[2] Mean of 8 a. m. + 8 p. m. ÷ 2.

[3] Mean of 7 a. m. + 7 p. m. ÷ 2.

[4] Mean of 6 a. m. + 6 p. m. ÷ 2.

[5] Mean of 7 a. m. + 2 p. m. ÷ 2.

[6] Mean of readings at various hours reduced to true daily mean by special tables.

[7] Mean from hourly readings of thermograph.

[8] Mean of 7 a. m. + 2 p. m. + 9 p. m. ÷ 3.

[9] Mean of sunrise and noon.

[10] Mean of sunrise, noon, sunset, and midnight.

The absence of a numeral indicates that the mean temperature has been obtained from daily readings of the maximum and minimum thermometers.

An italic letter following the name of a station, as "Livingston *a*," "Livingston *b*," indicates that two or more observers, as the case may be, are reporting from the same station. A small roman letter following the name of a station, or in figure columns, indicates the number of days missing from the record; for instance, "[b]" denotes 14 days missing.

No note is made of breaks in the continuity of temperature records when the same do not exceed two days. All known breaks, of whatever duration, in the precipitation record receive appropriate notice.

CORRECTIONS.

California, Fort Tejon, March, 1896, make precipitation 4.01 instead of 0.41. California, Mutah Flat, July, 1896, make precipitation 0.30 instead of 0.00. North Carolina, Linville, July, 1896, make precipitation 11.24 instead of 11.74.

NOTE.—The following change has been made in names of stations: Texas, Flower Bluff changed to Brighton.

TABLE III.—*Data from Canadian stations for the month of August*, 1896.

Stations.	Pressure.			Temperature.		Precipitation.		Prevailing direction of wind.	Total depth of snow.
	Mean not reduced.	Mean reduced.	Departure from normal.	Mean.	Departure from normal.	Total.	Departure from normal.		
	Inches.	*Inches.*	*Inches.*	°	°	*Inches*	*Inches.*		
St. Johns, N. F	29.86	30.00	+ .01	58.0	— 3.0	2.74	.....	w.	0.0
Sydney, C. B. I	29.96	30.02	+ .06	61.4	— 0.6	1.60	— 2.30	sw.	0.0
Grindstone, G. St. L.	29.88	29.91	.....	60.9	.....	3.02	.....	sw.	0.0
Halifax, N. S	29.93	30.06	+ .08	61.9	— 1.1	3.02	— 0.54	sw.	0.0
Grand Manan, N. B.	29.96	30.01	.....	60.0	.....	1.87	— 1.22	s.	0.0
Yarmouth, N. S.	29.94	30.02	+ .02	59.0	— 0.5	4.31	+ 1.09	s.	0.0
St. Andrews, N. B.	.....	.....	.....	60.2	.....	1.01	— 1.84	se.	0.0
Charlottet'n, P. E. I.	29.96	30.00	.....	63.5	.....	1.80	— 1.60	sw.	0.0
Chatham, N. B	29.96	29.98	+ .04	62.6	+ 1.6	2.09	— 2.05	w.	0.0
Father Point, Que.	29.90	29.93	+ .02	55.2	— 0.8	3.17	+ 0.61	w.	0.0
Quebec, Que.	29.64	29.96	+ .01	62.4	— 0.6	4.32	+ 0.90	w.	0.0
Montreal, Que	29.77	29.97	+ .02	66.1	— 0.4	5.35	+ 3.18	sw.	0.0
Rockliffe, Ont.	29.46	29.96	+ .02	60.5	+ 0.5	4.07	+ 1.14	se.	0.0
Kingston, Ont	29.68	29.99	+ .02	68.4	+ 1.9	2.13	+ 0.14	sw.	0.0
Toronto, Ont	29.64	30.01	+ .02	66.3	+ 0.8	1.13	— 1.45	n.	0.0
White River, Ont	28.62	29.95	.....	56.8	+ 0.7	4.36	+ 1.30	sw.	0.0
Port Stanley, Ont.	29.41	30.03	+ .04	65.7	.....	4.27	+ 1.88	w.	0.0

TABLE III.—*Data from Canadian stations*—Continued.

Stations.	Pressure.			Temperature.		Precipitation.		Prevailing direction of wind.	Total depth of snow.
	Mean not reduced.	Mean reduced.	Departure from normal.	Mean.	Departure from normal.	Total.	Departure from normal.		
	Inches.	*Inches.*	*Inches.*	°	°	*Inches*	*Inches.*		
Saugeen, Ont	29.30	30.00	+ .02	64.8	+ 2.3	3.56	+ 1.78	sw.	0.0
Parry Sound, Ont.	29.30	29.98	+ .01	63.8	+ 1.8	4.28	+ 1.60	w.	0.0
Port Arthur, Ont.	29.20	29.88	— .05	59.2	+ 0.2	1.73	— 0.64	w.	0.0
Winnipeg, Man	29.08	29.89	— .02	60.8	— 0.7	1.51	— 1.95	w.	0.0
Minnedosa, Man	28.14	29.90	+ .01	57.8	— 0.7	3.69	+ 1.83	w.	0.0
Qu'Appelle, Assin.	27.70	29.91	+ .01	57.6	— 2.9	2.05	+ 0.58	nw.	0.0
Medicine Hat, Assin	27.68	29.91	+ .01	63.4	— 2.1	1.79	+ 0.80	nw.	0.0
Swift Curr't, Assin.	27.42	29.94	+ .02	60.4	— 2.1	2.68	+ 0.94	w.	0.0
Calgary, Alberta	25.47	29.93	+ .03	57.4	— 1.1	1.66	+ 0.11	w.	0.0
Prince Albert, Sask.	28.33	29.81	.....	56.8	.....	1.39	.....	nw.	0.0
Edmonton, Alberta.	27.68	29.98	+ .10	56.4	— 1.2	2.04	+ 0.21	nw.	0.0
Battleford, Sask	28.22	29.91	.....	59.0	.....	1.16	.....	nw.	0.0
Hamilton, Bermuda	29.96	30.12	+ .02	80.0	.....	4.60	.....	sw.	0.0
Banff, Alberta	25.52	30.07	.....	54.0	.....	1.33	.....	sw.	0.0
Esquimalt, B. C.	30.00	30.03	.....	57.4	.....	0.57	.....	e.	0.0
Ottawa, Ont	29.66	30.01	.....	65.1	.....	3.91	.....	w.	0.0

TABLE V.—*Mean temperature for each hour of seventy-fifth meridian time, August*, 1896.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Bismarck, N Dak.....	61.1	60.3	58.7	57.9	56.4	55.6	54.6	56.0	59.3	63.8	68.5	71.7	74.2	76.5	78.4	79.7	80.0	80.2	78.8	76.9	72.1	68.0	64.9	62.8	67.4
Boston, Mass.....	67.2	66.7	66.4	66.0	65.6	65.6	67.1	69.2	71.5	73.3	74.1	74.8	74.6	74.4	74.3	74.4	73.5	73.0	71.9	70.3	69.5	68.9	68.3	67.8	70.3
Buffalo N Y.....	66.5	65.7	65.0	64.9	64.5	64.8	65.9	67.0	68.7	70.3	71.7	72.5	72.5	73.2	73.9	73.9	73.2	72.4	71.2	70.7	69.5	68.5	67.1	66.6	69.2
Chicago, Ill.....	70.5	69.7	68.9	68.5	68.1	67.6	67.6	68.8	71.3	72.8	74.0	75.0	75.5	76.2	76.9	78.0	78.1	77.6	76.4	75.2	73.5	73.0	71.9	71.1	72.8
Cincinnati, Ohio.....	71.5	70.8	70.2	69.5	68.7	68.1	68.2	69.1	71.9	74.9	77.6	79.3	80.6	81.1	82.2	82.5	82.2	81.6	80.5	79.0	77.0	75.3	73.2	72.0	75.3
Cleveland, Ohio	67.0	66.4	65.7	65.1	64.8	64.7	65.5	67.1	70.3	72.9	74.4	75.5	76.5	76.3	76.4	76.4	76.2	75.9	74.4	73.2	71.6	70.1	68.8	67.3	70.9
Detroit, Mich.....	66.8	66.0	65.3	64.9	64.4	64.0	64.3	66.4	68.6	70.8	72.5	73.4	74.5	75.4	76.5	76.7	76.1	75.1	73.6	71.6	70.5	69.4	68.3	67.3	70.1
Dodge City, Kans.....	74.5	72.8	71.2	70.6	69.2	68.2	67.1	67.3	71.1	76.2	80.1	83.5	86.4	88.4	90.3	91.2	91.8	90.9	88.5	85.8	81.6	78.8	76.8	75.2	79.1
Eastport, Me.....	54.8	54.6	54.3	53.8	53.7	54.5	55.7	57.4	59.0	60.7	62.2	63.6	64.0	64.1	63.7	63.2	62.5	60.8	59.2	57.8	56.9	56.6	55.7	55.2	58.5
Galveston, Tex.....	82.7	82.4	82.2	81.9	81.6	81.0	80.8	81.0	81.5	82.8	83.7	84.7	85.2	85.8	86.0	86.2	86.0	85.5	84.8	84.2	83.9	83.4	83.2	83.0	83.5
Havre, Mont.....	61.0	59.5	57.7	56.3	54.8	54.1	53.3	53.0	55.1	58.9	64.0	68.1	71.8	74.3	76.5	78.1	79.0	79.5	78.4	76.8	73.7	70.0	66.1	63.3	66.0
Kansas City, Mo.....	74.3	73.4	72.7	71.7	70.9	69.9	69.2	69.4	71.7	74.4	77.2	80.0	82.3	83.2	84.8	85.5	85.6	85.0	83.9	82.2	79.2	77.6	75.9	74.6	77.3
Key West, Fla.....	82.3	82.0	81.9	81.9	81.5	81.6	82.3	83.8	84.6	85.4	86.4	86.9	86.5	86.3	86.6	86.1	85.6	85.2	84.4	83.4	83.0	82.9	82.6	82.5	84.0
Memphis, Tenn.....	77.3	76.6	75.9	75.4	74.2	73.8	73.4	74.8	77.5	80.6	83.8	86.3	88.3	89.7	90.5	90.7	90.4	88.8	86.7	85.3	82.8	81.2	79.4	78.3	81.7
New Orleans, La.....	79.1	78.7	78.3	78.2	78.0	77.6	77.8	78.8	80.8	83.0	84.7	85.5	85.8	87.0	85.8	86.7	86.9	86.3	84.5	83.2	81.9	80.6	79.6	79.2	82.0
New York, N. Y.....	70.5	69.8	68.9	68.4	68.1	68.1	68.9	69.9	71.6	73.5	75.1	75.6	76.8	77.3	76.9	76.3	76.0	75.5	74.6	74.3	73.1	72.6	71.6	70.8	73.7
Philadelphia, Pa.....	71.7	71.2	70.6	70.1	69.6	69.5	70.4	72.7	74.8	77.2	79.1	80.4	81.6	82.5	83.0	83.1	82.5	81.1	78.9	77.0	75.6	74.1	73.3	72.9	76.0
Pittsburg, Pa.....	69.3	68.3	67.7	67.1	66.4	65.9	66.4	67.8	70.3	72.2	74.5	76.3	77.8	78.1	78.9	79.2	79.0	78.1	77.0	75.0	73.4	72.4	71.0	69.6	72.6
Portland, Oreg.....	66.0	64.8	63.2	62.2	61.3	60.4	59.6	59.2	58.5	58.6	59.6	61.2	63.1	65.2	67.6	68.9	71.2	72.3	72.8	72.8	71.9	70.5	68.6	67.3	65.3
St. Louis, Mo.....	75.7	74.9	74.1	73.3	72.6	72.0	72.0	73.0	75.2	77.8	80.4	82.9	84.3	85.2	86.2	86.5	86.0	85.2	83.9	82.2	80.6	78.9	77.6	76.4	79.0
St. Paul, Minn.....	66.3	65.3	64.0	62.7	61.7	60.7	60.4	61.6	64.2	67.6	71.3	73.8	76.0	77.5	78.3	78.9	78.8	78.9	77.8	76.2	73.6	71.7	69.3	67.8	70.2
Salt Lake City, Utah..	70.9	69.5	69.0	68.1	67.1	66.3	66.2	65.4	67.0	70.5	73.6	77.4	79.6	82.1	82.6	83.2	83.5	83.7	83.5	81.7	80.2	76.0	74.0	72.7	74.7
San Diego, Cal.....	67.5	67.0	66.6	66.4	66.1	65.9	65.5	65.6	65.6	66.2	67.6	69.2	70.5	71.2	72.0	72.6	73.0	72.6	72.2	71.6	70.7	69.4	68.5	67.9	68.8
San Francisco, Cal....	56.6	56.5	56.5	55.9	55.8	55.6	55.6	55.5	55.4	55.7	56.4	57.7	59.6	61.3	62.2	63.1	63.4	63.8	63.1	61.4	60.0	58.6	57.2	56.9	58.5
Savannah, Ga.....	76.5	76.2	75.7	75.4	74.9	74.4	75.6	78.7	81.7	84.6	86.6	87.7	88.1	87.9	87.2	85.5	84.8	82.9	81.4	79.8	78.9	77.8	77.2	76.8	80.7
Washington, D. C....	70.0	69.3	68.4	67.7	67.4	67.2	69.3	72.2	75.7	78.5	80.3	81.7	82.9	84.1	84.5	84.1	83.0	81.4	78.7	76.2	74.2	72.8	71.9	70.8	75.5

TABLE VI.—*Mean pressure for each hour of seventy-fifth meridian time, August*, 1896.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Bismarck, N. Dak...	28.236	.242	.246	.250	.257	.263	.265	.273	.279	.281	.280	.274	.260	.248	.235	.217	.207	.202	.195	.192	.201	.218	.229	.231	.241
Boston, Mass.....	29.886	.885	.881	.881	.890	.898	.904	.905	.905	.901	.902	.884	.878	.868	.859	.858	.858	.861	.867	.879	.884	.885	.887	.884	.883
Buffalo, N. Y.....	29.214	.208	.209	.212	.218	.227	.235	.241	.237	.238	.236	.230	.224	.214	.208	.197	.194	.188	.192	.197	.206	.207	.209	.213	.215
Chicago, Ill.....	29.160	.158	.157	.157	.158	.164	.174	.184	.184	.187	.189	.186	.180	.168	.155	.150	.142	.137	.135	.138	.151	.157	.159	.162	.162
Cincinnati, Ohio ...	29.415	.409	.405	.409	.412	.421	.432	.439	.444	.440	.435	.428	.419	.411	.393	.384	.377	.373	.375	.381	.396	.405	.412	.414	.410
Cleveland, Ohio	29.261	.260	.262	.266	.272	.282	.295	.297	.298	.296	.294	.282	.267	.254	.240	.228	.225	.230	.235	.241	.249	.252	.258	.258	.263
Detroit, Mich.....	29.258	.257	.258	.258	.265	.273	.280	.289	.289	.292	.288	.278	.271	.261	.250	.243	.237	.232	.229	.234	.246	.253	.255	.258	.261
Dodge City, Kans..	27.448	.451	.447	.450	.451	.455	.459	.466	.482	.486	.488	.482	.468	.451	.431	.409	.392	.381	.378	.376	.394	.415	.431	.441	.439
Eastport, Me.....	29.914	.911	.910	.913	.921	.930	.938	.940	.942	.940	.933	.926	.920	.912	.907	.904	.901	.904	.909	.913	.915	.916	.917	.914	.919
Galveston, Tex.....	30.042	.034	.030	.029	.031	.041	.053	.062	.063	.069	.073	.073	.065	.053	.041	.024	.015	.009	.012	.014	.022	.035	.042	.042	.041
Havre, Mont.....	27.396	.400	.399	.400	.400	.402	.409	.415	.420	.422	.419	.412	.398	.387	.375	.364	.351	.343	.339	.339	.350	.364	.380	.389	.386
Kansas City, Mo....	29.029	.025	.026	.033	.035	.042	.056	.065	.075	.081	.085	.083	.067	.056	.036	.023	.012	.003	.999	.997	.011	.025	.033	.037	.039
Key West, Fla.....	30.061	.053	.043	.041	.042	.050	.066	.077	.084	.089	.087	.083	.072	.060	.044	.033	.028	.029	.039	.051	.062	.068	.071	.067	.058
Memphis, Tenn.....	29.640	.635	.630	.632	.635	.645	.658	.669	.678	.682	.684	.681	.673	.658	.640	.619	.608	.595	.591	.602	.615	.631	.638	.642	.641
New Orleans, La....	30.026	.017	.015	.016	.023	.033	.044	.046	.053	.056	.056	.056	.043	.034	.022	.007	.999	.995	.001	.999	.016	.030	.038	.031	.027
New York, N. Y....	29.708	.704	.705	.707	.714	.722	.730	.732	.733	.729	.724	.717	.710	.701	.692	.687	.687	.686	.687	.694	.705	.709	.712	.709	.709
Philadelphia, Pa....	29.922	.920	.918	.917	.923	.930	.940	.947	.949	.948	.942	.932	.922	.911	.897	.894	.891	.891	.895	.906	.915	.923	.924	.923	.920
Pittsburg, Pa.....	29.188	.187	.186	.186	.195	.206	.216	.221	.223	.220	.216	.209	.199	.190	.180	.167	.164	.160	.162	.166	.176	.180	.183	.185	.190
Portland, Oreg.....	29.856	.864	.867	.867	.871	.871	.875	.879	.886	.892	.895	.897	.895	.890	.881	.872	.859	.850	.841	.835	.833	.835	.846	.853	.867
St. Louis, Mo.....	29.463	.464	.460	.458	.459	.467	.479	.490	.492	.494	.495	.492	.484	.474	.461	.448	.439	.432	.431	.433	.446	.456	.464	.467	.464
St. Paul, Minn.....	29.082	.083	.082	.085	.093	.098	.107	.113	.114	.114	.113	.107	.098	.090	.082	.074	.067	.058	.055	.055	.063	.074	.080	.084	.086
Salt Lake City, Utah	25.686	.691	.693	.697	.699	.699	.707	.714	.728	.736	.739	.740	.736	.724	.707	.692	.675	.665	.653	.651	.650	.658	.671	.675	.695
San Diego, Cal.....	29.936	.938	.938	.935	.928	.924	.923	.926	.935	.942	.952	.955	.955	.953	.943	.937	.925	.915	.908	.905	.902	.906	.914	.928	.930
San Francisco, Cal..	29.860	.861	.863	.860	.856	.856	.856	.860	.872	.882	.893	.901	.906	.902	.891	.882	.869	.854	.842	.834	.829	.832	.844	.854	.865
Savannah, Ga.....	29.984	.975	.971	.969	.975	.986	.001	.011	.017	.019	.015	.005	.989	.971	.956	.948	.945	.949	.954	.961	.975	.982	.987	.986	.980
Washington, D. C...	29.943	.938	.935	.934	.938	.947	.958	.966	.968	.969	.965	.961	.948	.936	.926	.914	.912	.911	.916	.924	.933	.939	.943	.942	.940

TABLE VII.—*Average wind movement for each hour of seventy-fifth meridian time, August, 1896.*

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Abilene, Tex.	8.0	7.8	7.8	7.7	7.8	7.4	7.5	7.4	8.6	10.7	11.1	10.5	10.2	10.2	9.9	10.2	10.5	10.2	10.6	10.8	8.5	6.6	6.7	6.8	8.9
Albany, N. Y.	4.7	4.7	5.0	5.1	5.1	5.1	5.7	6.6	7.4	7.9	7.9	8.8	9.2	10.0	9.6	9.4	8.6	7.6	6.6	6.0	5.5	5.3	4.9	4.9	6.7
Alpena, Mich.	5.5	5.7	6.0	6.7	5.8	5.5	6.5	7.1	8.2	9.0	10.0	9.7	10.3	11.6	12.3	11.8	11.0	10.4	9.3	7.5	6.2	5.8	5.0	5.7	8.0
Amarillo, Tex.	13.0	13.2	13.8	14.3	13.6	14.0	14.4	14.1	15.9	18.7	19.2	17.7	15.7	15.4	15.5	14.9	15.2	16.4	16.5	15.5	13.6	13.3	13.0	12.8	15.0
Atlanta, Ga.	6.7	6.8	6.6	6.7	6.3	6.5	6.9	6.5	7.1	7.3	7.4	7.0	7.3	7.5	8.0	7.8	8.4	8.4	7.9	6.8	7.0	7.5	7.3	6.8	7.2
Augusta, Ga.	2.5	2.6	2.5	2.5	2.2	2.5	2.5	3.9	4.3	5.1	5.5	6.0	6.1	6.6	7.3	6.8	6.9	6.9	6.1	4.8	3.7	3.4	3.5	2.9	4.5
Baker City, Oreg.	2.9	3.6	4.6	5.5	6.2	6.5	6.8	7.2	7.1	6.7	4.9	2.6	3.3	4.1	4.4	5.0	5.5	5.9	5.7	6.4	5.4	4.2	3.4	2.7	5.0
Baltimore, Md.	2.6	3.1	3.2	3.1	2.9	3.3	3.3	4.0	4.6	5.1	5.5	5.6	5.7	5.9	6.5	6.5	6.4	5.3	4.2	3.5	3.5	3.0	3.4	2.8	4.3
Bismarck, N. Dak.	6.2	5.8	5.7	6.5	6.1	6.1	6.1	5.9	6.8	8.7	10.0	11.4	12.8	12.6	12.9	12.7	12.7	12.5	12.5	10.8	8.5	7.0	6.9	6.4	8.9
Block Island, R. I.	9.3	8.5	8.6	7.9	7.8	8.8	9.3	10.9	10.7	10.6	10.6	10.5	12.2	12.6	13.3	14.0	13.4	12.7	11.5	10.3	10.4	11.0	10.6	10.1	10.7
Boston, Mass.	7.6	7.6	7.5	7.5	7.0	7.1	7.2	7.3	7.6	7.8	8.8	9.7	10.3	10.1	10.2	10.0	10.1	8.8	8.0	7.8	8.0	7.8	7.9	7.8	8.3
Buffalo, N. Y.	10.6	11.0	11.8	11.3	10.7	10.9	11.2	12.4	12.0	12.5	13.4	13.6	13.7	13.5	13.5	14.2	13.8	13.9	12.2	11.3	11.4	10.7	11.5	11.5	12.2
Cairo, Ill.	4.8	4.9	5.0	5.2	4.9	5.5	5.8	5.3	5.6	6.3	6.8	7.5	7.6	7.5	8.0	8.6	8.5	8.0	6.9	5.6	5.3	5.5	5.5	5.0	6.2
Cape Henry, Va.	10.7	10.9	10.6	10.8	10.7	10.8	11.1	11.3	11.0	11.1	11.3	11.7	11.9	11.5	11.3	11.8	11.4	10.4	9.5	9.5	9.9	10.2	10.4	11.0	10.9
Charleston, S. C.	6.0	5.8	5.0	4.6	4.7	4.9	6.0	6.8	7.7	8.5	8.2	8.6	9.5	10.0	10.1	9.9	10.0	9.5	8.7	7.5	6.6	6.5	5.8	7.4	
Charlotte, N. C.	4.8	4.8	4.8	4.7	4.1	4.2	4.7	5.1	5.6	6.1	6.3	6.2	5.9	6.2	6.0	6.1	6.2	5.6	4.7	4.3	4.4	4.8	5.1	5.0	5.2
Chattanooga, Tenn.	3.5	3.4	3.2	2.9	2.8	2.9	3.1	3.3	4.6	5.5	5.8	6.2	6.8	7.1	7.2	8.4	8.6	8.8	7.3	5.3	4.4	4.2	4.2	4.0	5.1
Cheyenne, Wyo.	7.1	7.6	7.3	7.2	7.2	6.6	5.8	5.9	6.0	7.2	9.8	9.6	10.5	11.6	11.5	11.5	10.7	11.2	10.8	11.2	9.8	8.2	7.2	7.0	8.7
Chicago, Ill.	14.2	14.1	13.9	13.7	13.9	12.9	13.2	12.6	12.0	12.9	13.6	14.2	14.2	15.6	15.5	15.3	16.0	15.5	13.9	13.2	13.6	14.2	15.3	14.8	14.1
Cincinnati, Ohio.	4.6	3.8	3.8	3.7	3.9	3.7	3.6	4.5	5.4	5.7	6.5	7.2	7.3	8.1	8.3	8.1	8.5	8.1	7.4	5.9	5.2	5.5	5.3	4.2	5.8
Cleveland, Ohio.	9.7	9.6	9.2	9.2	9.3	8.9	9.7	9.9	9.9	10.8	11.5	12.5	12.9	13.8	14.5	13.1	12.7	12.4	10.1	8.5	8.6	8.5	9.2	9.3	10.6
Columbia, Mo.	6.1	6.1	5.7	5.7	5.9	5.2	5.5	5.1	5.7	6.4	7.8	8.1	8.6	9.0	8.5	8.7	8.1	7.6	6.6	5.3	5.4	5.3	5.7	5.9	6.6
Columbus, Ohio.	4.0	4.1	3.5	3.8	3.9	3.6	3.3	4.1	4.6	5.0	5.7	5.7	5.9	6.4	6.6	7.3	7.2	6.4	5.1	4.5	4.7	5.0	4.8	4.5	5.0
Concordia, Kans.	5.8	5.0	5.0	4.8	4.8	4.3	5.2	5.3	6.0	7.4	7.4	7.0	7.7	8.0	8.1	8.5	7.9	7.3	6.7	4.9	5.0	5.3	5.7	6.0	6.2
Corpus Christi, Tex.	12.1	9.9	7.9	6.4	5.6	5.2	5.5	5.5	6.6	8.7	9.4	9.4	11.7	14.3	16.5	17.7	18.5	19.1	18.9	17.2	16.4	15.8	15.2	14.1	12.0
Davenport, Iowa.	5.6	5.7	6.0	5.5	6.1	5.9	6.0	5.8	6.7	7.8	8.5	8.4	8.9	9.3	9.9	9.7	9.5	9.0	7.7	6.4	5.9	5.5	5.4	5.5	7.1
Denver, Colo.	6.0	5.7	7.1	7.1	6.4	6.1	6.1	6.3	5.2	4.0	4.1	5.2	7.7	7.8	7.5	7.7	8.7	9.3	8.3	8.8	8.2	7.0	6.6	6.7	6.8
Des Moines, Iowa.	5.7	5.7	6.1	5.6	5.3	4.5	4.5	4.9	5.7	6.5	8.1	8.6	9.4	9.1	9.6	9.6	9.2	8.4	7.0	6.2	5.9	5.9	5.4	5.0	6.7
Detroit, Mich.	6.7	7.3	7.2	7.5	7.0	6.5	6.5	7.2	7.9	8.6	9.1	9.5	9.5	9.7	9.7	9.6	9.5	9.0	8.0	6.9	6.9	6.8	7.0	7.1	7.9
Dodge City, Kans.	9.6	9.4	9.1	9.0	8.8	8.1	7.5	7.1	9.3	11.4	12.2	11.7	12.3	12.1	12.7	13.9	13.5	14.6	14.8	12.5	11.2	11.0	11.3	10.9	11.0
Dubuque, Iowa.	2.7	2.6	3.0	2.9	2.4	2.3	2.3	3.0	4.2	4.5	4.8	5.4	6.3	6.2	6.4	6.3	6.1	5.5	4.4	3.3	3.0	2.7	2.5	2.5	4.0
Duluth, Minn.	8.9	9.5	9.2	8.9	9.0	9.2	8.9	6.9	7.3	9.0	10.4	11.3	11.0	10.8	11.1	10.9	11.2	10.5	9.3	7.1	6.6	7.2	8.5	8.7	9.2
Eastport, Me.	6.6	6.0	6.0	5.9	5.7	5.3	5.4	6.4	7.2	7.6	7.7	8.8	9.0	9.0	8.9	9.1	8.0	7.4	7.0	7.0	7.4	7.0	6.1	6.8	7.1
El Paso, Tex.	11.1	11.5	10.6	9.8	10.2	9.3	8.5	8.1	7.4	7.6	8.5	9.1	8.8	9.1	9.4	10.0	10.1	9.8	10.0	9.8	9.7	9.5	8.8	8.9	9.4
Erie, Pa.	8.3	8.4	8.9	8.7	8.5	8.6	8.5	9.0	8.6	9.9	9.8	10.1	10.9	11.3	10.8	10.1	9.7	8.9	8.4	8.5	8.7	8.6	8.5	8.4	9.2
Eureka, Cal.	5.5	4.9	3.9	3.5	3.3	3.4	3.4	3.3	3.3	3.5	4.1	4.0	5.4	6.4	8.0	8.6	9.6	9.5	8.8	8.9	8.5	7.7	6.6	6.2	5.8
Fort Canby, Wash.	10.1	10.1	8.8	7.9	7.2	6.7	6.8	7.5	7.5	7.7	8.4	8.4	8.8	9.9	9.9	10.5	11.0	11.3	11.5	11.1	10.4	10.8	10.8	10.1	9.3
Fort Smith, Ark.	4.5	4.7	4.7	5.1	5.3	5.0	4.7	4.6	5.2	5.1	6.0	6.4	6.6	7.2	7.0	7.1	7.3	8.3	7.2	6.6	5.9	5.9	5.2	5.3	5.9
Fresno, Cal.	9.5	9.6	9.5	9.1	8.4	7.1	6.4	5.2	4.4	4.0	3.8	3.4	4.2	4.5	4.8	5.3	5.7	6.0	6.5	6.9	7.6	8.0	8.8	9.2	6.6
Galveston, Tex.	8.3	8.2	8.5	7.9	7.7	7.4	7.2	7.1	7.5	8.1	8.5	8.5	9.3	10.3	10.7	10.7	10.5	10.5	10.8	9.7	8.8	9.2	8.4	8.4	8.8
Grand Haven, Mich.	6.8	7.5	7.1	6.6	6.6	6.7	6.6	7.1	8.3	9.2	10.6	11.1	11.2	11.6	11.2	10.6	10.4	9.4	8.2	6.7	6.6	6.4	6.4	6.4	8.3
Greenbay, Wis.	5.8	6.2	5.8	6.4	6.3	5.9	5.8	6.2	7.4	8.2	8.2	8.5	9.0	10.3	10.6	10.5	10.1	8.7	8.3	6.9	6.2	6.2	6.4	5.8	7.5
Hannibal, Mo.	6.1	5.7	6.2	6.4	6.2	6.2	6.1	5.9	6.6	7.2	8.7	8.8	9.1	9.7	10.0	10.2	9.5	8.9	7.2	5.8	5.0	4.8	5.8	6.0	7.2
Harrisburg, Pa.	4.1	4.1	4.3	4.6	4.0	4.3	3.6	4.3	5.6	6.0	6.2	7.0	7.2	7.2	7.2	7.2	6.9	6.6	5.4	4.4	3.9	3.4	4.0	4.0	5.2
Hatteras, N. C.	10.2	9.5	9.6	9.7	9.8	9.8	10.7	10.8	10.7	11.3	11.6	11.9	13.2	13.4	13.3	13.1	12.7	12.0	12.1	11.2	10.4	9.7	9.6	9.9	11.1
Havre, Mont.	6.1	6.6	6.3	5.9	6.2	6.4	6.6	6.3	7.1	9.0	10.2	10.3	10.8	10.7	10.9	10.5	11.1	11.1	11.7	11.4	10.4	8.1	8.0	7.2	8.7
Helena, Mont.	8.3	8.1	7.2	7.6	7.2	7.3	6.9	6.8	5.6	3.9	4.3	4.8	5.7	6.2	7.5	8.2	8.3	8.5	8.1	8.7	8.1	6.7	6.3	6.8	7.0
Huron, S. Dak.	11.0	10.6	9.6	9.5	9.1	8.8	9.1	9.1	10.3	11.7	12.8	13.2	13.6	14.3	14.8	14.8	14.8	14.4	13.1	11.2	10.2	10.2	10.5	10.8	11.6
Idaho Falls, Idaho.	7.8	6.7	5.6	5.2	5.1	5.2	5.3	5.4	5.3	5.3	5.4	5.8	6.8	7.3	8.2	9.3	10.1	10.6	10.9	11.1	11.0	9.1	7.7	6.8	7.4
Indianapolis, Ind.	4.0	3.7	4.0	3.7	3.7	3.7	4.1	4.7	5.2	5.5	5.9	6.1	6.3	6.7	6.7	6.3	6.1	5.1	4.4	4.7	4.5	3.9	3.7	4.8	
Jacksonville, Fla.	5.3	5.3	5.3	5.1	5.4	5.0	4.7	5.6	6.2	6.9	6.9	7.2	7.0	8.6	8.5	9.0	8.4	8.6	7.5	6.3	5.8	6.0	5.7	5.6	6.5
Jupiter, Fla.	6.0	5.7	5.1	4.8	4.6	4.7	4.3	4.9	6.4	7.7	8.0	9.1	9.6	10.4	10.3	10.6	9.9	9.5	8.2	6.9	6.3	5.9	5.7	5.7	7.1
Kansas City, Mo.	6.6	6.8	7.4	6.6	6.4	6.2	5.7	6.0	7.0	7.6	8.5	8.5	9.0	9.4	9.0	9.4	9.3	8.5	7.9	6.6	5.6	5.9	5.9	5.9	7.3
Keokuk, Iowa.	4.6	5.0	5.1	5.4	4.7	4.9	4.5	4.9	5.9	6.6	6.8	7.6	8.3	8.2	8.6	8.8	8.5	7.5	6.2	4.7	4.3	4.6	4.9	4.7	6.1
Key West, Fla.	6.5	5.9	6.0	6.3	6.8	6.4	6.1	7.0	8.1	8.5	8.6	8.0	8.1	8.0	7.8	8.2	7.9	8.0	7.2	7.0	7.5	7.1	7.3	6.9	7.3
Kittyhawk, N. C.	11.1	11.6	11.9	12.3	12.7	12.2	12.7	13.8	14.3	14.7	14.5	14.2	14.2	14.4	14.6	14.1	13.1	13.0	12.9	11.9	11.8	11.3	10.7	10.6	12.9
Knoxville, Tenn.	3.1	2.6	2.5	2.4	2.5	2.5	2.8	3.4	4.5	5.2	5.8	6.3	6.7	6.9	6.6	6.6	6.8	6.1	5.6	3.9	3.9	3.7	3.2	3.3	4.4
La Crosse, Wis.	5.2	4.6	5.2	5.2	4.9	4.4	4.4	4.3	4.7	6.0	6.4	7.3	8.4	8.8	9.1	9.3	8.9	8.1	7.3	6.1	5.4	5.3	5.0	4.9	6.2
Lander, Wyo.	3.9	3.1	2.5	2.5	2.0	2.2	2.2	1.7	1.5	1.4	2.4	2.9	3.7	5.5	6.7	7.0	7.5	7.9	7.7	7.0	5.7	6.2	5.6	4.9	4.3
Lexington, Ky.																									
Little Rock, Ark.	3.7	3.7	3.7	3.6	3.9	3.5	3.5	3.9	4.8	5.5	6.2	6.5	7.6	7.4	7.8	8.0	8.5	8.6	7.5	6.2	5.8	5.6	4.4	4.1	5.6
Los Angeles, Cal.	1.9	1.7	1.8	1.6	1.5	1.3	1.4	1.5	1.5	1.8	2.0	2.6	3.2	4.2	5.5	6.3	7.2	7.7	7.4	7.2	6.2	4.5	3.5	1.9	3.6
Louisville, Ky.	4.7	5.1	4.3	4.6	5.2	4.5	4.4	5.2	5.2	5.5	6.4	7.3	7.7	7.9	8.4	8.7	8.3	8.1	6.9	6.5	6.2	5.6	5.3	5.4	6.1
Lynchburg, Va.	1.5	1.5	1.1	1.2	1.3	0.9	1.5	2.3	3.2	4.3	4.6	4.7	4.9	4.8	5.0	4.9	4.8	4.4	3.1	2.0	1.6	1.4	1.4	1.5	2.8
Marquette, Mich.	9.7	9.6	9.5	9.7	9.4	9.6	9.2	9.7	9.8	10.9	11.1	11.3	11.5	11.0	10.7	10.9	10.0	8.6	6.5	6.0	5.2	6.2	8.7	9.5	9.3
Memphis, Tenn.	6.6	7.2	7.0	6.7	6.6	6.9	6.9	7.2	7.4	7.3	8.3	8.2	7.9	8.2	8.5	8.4	8.5	9.3	8.5	7.4	7.5	7.1	6.8	6.8	7.5
Meridian, Miss.	3.0	2.5	2.4	2.2	2.5	2.4	2.2	2.6	4.1	5.3	5.5	5.3	5.6	5.8	6.7	6.5	7.0	6.7	6.0	3.6	3.0	3.0	3.4	3.2	4.2
Miles City, Mont.	6.0	5.3	4.3	4.9	5.2	5.5	5.6	4.7	5.0	5.8	7.1	7.5	8.6	9.2	9.7	10.5	10.4	10.3	9.5	9.3	8.5	7.8	6.9	6.0	7.2
Milwaukee, Wis.	7.0	7.2	7.5	7.6	7.3	7.0	6.7	6.8	8.1	8.9	9.8	10.2	10.3	11.2	11.8	12.5	12.4	11.3	10.3	8.1	7.1	7.4	7.2	7.1	8.8
Mobile, Ala.	4.4	3.9	3.7	3.9	4.0	3.9	4.2	4.7	5.8	6.1	6.0	6.4	7.1	7.8	8.2	10.2	10.1	9.4	7.9	6.5	5.3	5.0	4.7	4.3	6.0
Montgomery, Ala.	4.0	3.9	3.6	3.5	3.3	3.1	3.5	4.0	4.6	4.8	5.2	5.3	6.0	6.4	6.5	7.4	7.2	6.5	5.3	4.4	4.7	4.5	4.4	4.2	4.8
Moorhead, Minn.	7.7	7.1	7.4	6.7	7.3	7.0	7.0	7.3	7.6	8.3	9.6	10.7	10.6	11.0	10.5	10.1	10.4	10.0	9.8	8.3	7.0	7.7	7.7	7.8	8.5
Nantucket, Mass.	6.1	6.4	7.0	6.5	6.8	6.9	7.1	8.3	9.0	9.2	9.3	9.3	9.6	9.4	9.5	9.4	9.4	9.0	7.2	7.2	6.7	6.5	6.7	6.1	7.9
Nashville, Tenn.	3.3	2.7	2.8	3.0	3.5	3.2	2.7	3.2	5.0	5.9	6.7	7.4	7.7	7.6	7.8	8.0	7.9	7.6	6.8	5.1	4.3	3.5	3.7	3.6	5.0
New Haven, Conn.	4.8	5.3	5.0	5.3	5.3	5.0	5.3	6.2	6.8	7.5	8.4	8.5	9.2	10.2	10.3	9.3	8.8	7.6	6.3	6.4	5.8	5.7	4.8	4.2	6.7
New Orleans, La.	4.7	4.6	4.5	4.7	4.1	4.6	4.1	4.9	6.3	7.5	8.0	8.1	8.1	8.6	8.2	8.3	8.0	7.6	7.0	6.4	5.8	5.6	5.2	5.2	6.3
New York, N. Y.	9.3	8.4	9.0	9.5	9.1	8.7	9.0	8.7	9.3	9.3	9.5	10.3	11.1	11.2	11.5	11.7	13.0	12.2	11.3	10.4	10.2	10.2	10.0	9.7	10.1
Norfolk, Va.	5.7	5.6	5.6	5.4	5.5	5.5	6.1	6.5	7.3	7.5	7.9	7.5	7.8	8.0	8.4	7.8	7.9	7.1	6.7	5.5	5.4	5.5	5.2	5.8	6.6
Northfield, Vt.	6.7	6.1	5.5	5.6	5.5	5.5	4.6	5.2	6.0	7.6	9.1	9.9	10.4	10.1	9.6	9.2	8.4	7.4	5.3	4.9	5.3	5.9	6.8	7.0	7.0
North Platte, Nebr.	7.8	8.1	8.1	7.5	7.6	6.3	5.8	6.0	7.0	8.3	8.8	9.5	10.1	10.6	11.2	10.9	10.8	10.6	10.7	8.7	8.0	7.3	7.7	7.9	8.5
Oklahoma, Okla.	7.6	6.9	6.6	6.6	6.4	6.3	6.2	5.9	6.7	8.3	9.0	8.9	8.6	8.6	9.0	9.5	9.4	9.5	9.1	8.1	6.9	6.9	7.4	7.5	7.7
Omaha, Nebr.	6.5	6.7	6.6	6.4	6.6	6.6	5.9	5.6	6.7	8.2	8.5	8.5	9.5	9.7	9.8	9.9	8.8	8.7	8.3	7.3	6.4	6.8	6.7	7.2	7.6
Oswego, N. Y.	7.5	7.6	7.3	7.4	7.2	7.0	7.3	8.7	9.3	9.6	10.2	10.3	10.0	10.0	9.7	9.6	8.3	7.6	7.0	7.5	7.3	7.6	8.1	8.0	8.3
Palestine, Tex.	5.3	5.4	4.8	4.7	4.2	3.9	3.5	3.9	5.9	7.1	7.0	6.6	6.9	7.3	7.7	7.4	6.8	5.2	4.1	4.6	4.8	5.1	5.7		
Parkersburg, W. Va.	3.6	3.3	2.8	3.0	2.9	2.6	2.6	3.2	3.8	4.7	4.9	5.4	5.7	5.9	5.7	5.9	5.3	4.4	3.4	3.1	3.0	3.3	3.6	4.1	

TABLE VII.—*Average wind movement, etc.*—Continued.

Stations.	1 a. m.	2 a. m.	3 a. m.	4 a. m.	5 a. m.	6 a. m.	7 a. m.	8 a. m.	9 a. m.	10 a. m.	11 a. m.	Noon.	1 p. m.	2 p. m.	3 p. m.	4 p. m.	5 p. m.	6 p. m.	7 p. m.	8 p. m.	9 p. m.	10 p. m.	11 p. m.	Midnight.	Mean.
Pensacola, Fla.	6.4	6.8	6.9	7.0	6.3	6.0	6.6	7.0	7.8	8.0	7.7	7.9	8.6	10.0	11.4	12.0	11.2	10.6	9.1	7.4	6.0	6.2	6.4	5.8	7.9
Philadelphia, Pa.	6.8	7.0	7.0	7.4	7.4	7.2	7.3	8.3	8.4	8.6	8.6	8.4	9.5	9.6	9.5	9.9	10.3	9.6	8.8	8.5	7.9	7.0	7.2	6.6	8.2
Phœnix, Ariz	4.9	4.2	4.3	4.0	4.0	3.7	3.4	3.7	3.6	4.0	4.5	4.4	4.6	5.0	5.0	5.7	5.9	5.8	5.6	5.5	4.6	4.7	5.0	5.4	4.6
Pierre, S. Dak.	7.2	7.2	6.6	6.0	7.0	7.0	7.4	6.5	7.4	9.0	10.8	10.9	11.5	12.2	11.3	11.8	11.5	11.1	11.1	11.5	9.5	8.5	9.4	8.8	9.2
Pittsburg, Pa.	3.3	3.4	3.4	3.0	3.4	2.9	3.4	3.8	4.4	5.5	5.6	6.0	5.8	6.7	6.6	6.5	6.3	5.9	5.0	4.3	3.9	4.1	3.9	3.4	4.6
Port Angeles, Wash.	4.2	4.1	4.1	4.0	4.1	4.1	3.9	3.5	3.8	3.7	3.4	3.7	5.1	5.6	6.1	6.3	6.6	7.5	8.2	8.5	7.3	6.5	4.9	4.6	5.2
Port Huron, Mich.	8.8	8.3	8.8	8.1	8.4	7.8	8.0	7.9	9.0	10.6	11.0	11.2	12.5	12.4	12.8	12.3	10.9	10.5	9.6	8.0	7.6	7.7	7.9	8.7	9.5
Portland, Me.	3.7	3.7	3.8	3.9	4.0	3.6	3.7	4.3	4.8	5.4	6.4	7.5	8.4	9.2	9.1	8.7	8.4	7.3	6.0	5.6	4.7	4.6	4.6	4.8	5.7
Portland, Oreg.	6.9	5.6	5.9	5.8	5.8	5.3	5.0	5.6	5.6	6.5	6.1	6.1	6.9	6.5	6.1	7.1	7.4	7.6	8.3	8.7	7.6	7.8	7.8	8.0	6.7
Pueblo, Colo.	4.7	4.9	4.7	4.7	4.4	5.1	5.0	4.5	4.9	5.1	5.3	6.0	6.5	6.6	6.8	7.2	7.6	8.9	9.6	9.9	9.4	8.3	7.5	6.3	6.4
Raleigh, N. C.	4.0	3.8	3.9	4.1	4.1	3.6	4.0	5.0	5.5	6.0	6.0	5.7	5.5	5.5	5.7	5.7	5.5	4.8	3.4	3.6	3.8	3.7	3.9	4.1	4.6
Rapid City, S. Dak.	8.2	8.0	7.5	7.4	7.2	6.5	6.4	6.3	7.3	7.6	9.8	11.1	12.7	14.2	14.2	13.9	13.4	13.7	12.6	11.9	8.9	7.8	8.5	8.9	9.8
Redbluff, Cal.	3.4	3.8	3.6	3.0	3.4	3.3	3.0	3.0	2.9	2.5	2.9	2.9	3.4	3.5	4.1	4.5	5.5	6.1	6.2	6.0	5.4	5.4	4.6	4.2	4.0
Rochester, N. Y.	5.2	5.4	5.6	5.8	5.7	5.6	5.8	6.3	8.1	7.7	8.1	7.8	9.0	8.7	8.9	8.5	8.0	6.8	5.7	5.4	5.3	5.8	5.5	5.2	6.7
Roseburg, Oreg.	2.8	2.3	1.8	2.1	1.8	1.9	2.0	2.0	2.0	2.2	2.4	2.7	3.4	3.9	3.9	4.5	5.1	6.0	6.7	7.1	7.4	6.6	5.1	3.5	3.7
Sacramento, Cal.	9.5	9.5	9.5	9.5	9.8	9.5	8.6	8.7	7.8	7.5	7.3	6.9	7.5	7.5	7.4	7.4	7.9	8.4	9.0	10.0	10.2	9.6	10.0	9.9	8.7
St. Louis, Mo.	8.8	8.4	8.8	8.1	7.6	7.3	7.8	7.3	7.1	8.0	9.4	9.7	10.5	10.5	10.2	10.9	10.6	10.2	9.5	8.5	8.0	8.3	8.2	8.7	8.9
St. Paul, Minn.	4.5	3.7	3.7	4.6	4.5	4.5	4.0	4.8	5.5	6.1	7.6	8.8	9.0	9.8	10.2	10.1	10.0	9.5	8.1	7.0	5.3	5.5	5.0	4.3	6.5
Salt Lake City, Utah.	4.3	4.8	4.8	4.0	4.2	4.2	4.3	3.8	3.3	3.4	3.7	5.3	7.2	8.1	8.5	8.1	8.5	8.2	7.8	7.5	5.9	5.3	5.1	5.0	5.6
San Antonio, Tex.	8.2	6.3	5.0	4.2	4.3	3.8	4.1	3.6	4.8	7.0	6.8	7.0	7.7	7.7	8.7	8.6	9.0	10.0	11.3	12.1	11.9	11.6	11.5	9.9	7.7
San Diego, Cal.	2.0	1.8	1.8	2.0	2.0	1.9	2.0	1.8	2.1	2.4	3.3	4.8	7.2	8.7	9.8	10.1	9.7	9.6	8.8	8.3	6.6	5.1	3.8	2.9	4.9
Sandusky, Ohio	7.2	6.8	6.5	6.0	6.0	6.4	6.8	6.8	6.9	7.2	7.7	7.7	8.6	8.5	8.5	8.8	8.1	7.5	6.4	5.9	5.7	6.2	6.8	6.7	7.1
San Francisco, Cal.	12.8	11.6	10.6	9.6	9.6	8.3	9.0	9.4	8.4	8.1	9.0	8.9	9.9	11.8	14.7	19.2	20.9	21.7	20.9	22.1	22.2	20.5	18.6	16.5	13.9
San Luis Obispo, Cal.	2.5	2.3	2.0	2.2	2.4	2.5	2.3	2.6	2.6	2.7	3.4	3.7	3.9	4.7	5.5	6.5	6.6	7.0	6.3	6.5	5.5	4.6	3.8	3.5	4.0
Santa Fe, N. Mex.	6.2	5.6	4.9	4.2	3.8	4.0	3.9	4.0	3.3	4.0	5.5	6.4	6.5	7.0	6.9	7.4	8.1	9.5	9.1	9.0	8.1	7.0	6.8	6.8	6.2
Sault Ste Marie, Mich.	3.7	3.9	4.1	4.1	4.1	4.5	5.0	5.8	6.6	8.2	9.6	10.5	11.7	12.2	12.0	11.8	11.7	11.0	8.9	6.7	5.7	4.9	4.7	4.6	7.3
Savannah, Ga.	5.5	5.2	4.7	4.6	4.5	4.5	4.5	4.9	6.1	6.3	6.6	7.3	7.3	8.8	9.1	9.7	9.2	8.5	7.5	6.6	6.0	5.6	5.5	5.2	6.4
Seattle, Wash.	2.3	2.2	1.8	2.2	2.0	2.1	2.0	2.2	2.6	2.4	2.9	3.3	4.1	4.1	4.8	5.3	5.1	5.3	5.2	5.1	4.4	3.3	3.6	2.4	3.3
Shreveport, La.	5.1	4.9	4.7	4.2	3.9	3.6	3.7	3.9	5.5	6.6	6.3	6.0	5.8	6.0	5.8	6.1	7.0	7.3	6.7	5.9	5.2	5.6	6.1	5.9	5.5
Sioux City, Iowa	6.7	7.4	7.6	8.3	7.8	7.3	7.3	7.8	8.3	9.6	10.5	11.1	11.4	12.4	12.2	12.4	12.7	12.2	9.3	8.0	7.2	6.8	6.7	7.3	9.1
Spokane, Wash.	3.1	3.4	2.6	2.8	2.6	2.6	2.8	2.6	2.4	3.2	3.8	4.8	5.3	5.4	5.8	6.1	6.0	6.4	6.4	5.9	5.6	4.3	3.4	3.1	4.2
Springfield, Ill.	6.5	6.5	6.8	7.1	6.6	6.0	5.9	6.2	6.4	6.9	7.7	8.3	8.3	8.5	8.9	9.1	8.7	8.0	7.4	5.7	5.4	5.8	6.2	6.0	7.0
Springfield, Mo.	8.2	8.4	7.9	7.4	7.3	7.8	7.5	7.6	7.7	8.3	9.0	8.9	9.2	9.0	8.8	8.6	9.3	8.8	7.6	6.7	6.8	7.4	8.0	8.3	8.1
Tampa, Fla.	4.1	3.7	3.7	3.9	3.8	3.4	3.6	4.3	5.1	5.6	5.7	5.8	7.3	7.4	6.6	6.5	6.8	5.6	6.1	4.8	4.0	3.7	3.8	3.2	4.9
Tatoosh Island, Wash.	6.3	6.6	7.0	6.9	5.9	5.7	5.3	5.5	5.6	5.6	6.3	6.1	5.4	6.3	6.8	7.3	7.0	6.8	6.5	7.0	6.4	6.3	6.0	5.7	6.3
Toledo, Ohio.	7.4	7.2	6.7	6.2	6.6	6.5	6.2	6.6	8.0	8.6	9.2	9.3	9.4	9.6	9.8	10.2	10.5	9.1	8.2	7.1	7.4	7.9	7.9	7.8	8.1
Vicksburg, Miss.	5.6	5.4	4.9	4.9	4.5	4.1	4.3	4.1	4.7	5.2	5.4	5.8	6.0	6.2	6.0	6.3	7.3	6.5	6.3	5.3	5.2	4.8	5.3	5.6	5.4
Vineyard Haven, Mass.	4.5	4.7	4.5	4.9	5.0	4.9	5.4	5.3	5.1	4.6	4.8	5.6	5.6	5.7	5.4	5.3	5.1	5.5	5.3	5.0	4.3	3.6	4.4	5.0	5.1
Walla Walla, Wash.	5.3	5.1	5.3	4.8	5.0	4.9	5.4	5.3	5.1	4.6	4.8	5.6	5.6	5.7	5.4	5.3	5.1	5.5	5.3	5.0	4.3	3.6	4.4	5.0	5.0
Washington, D. C.	3.7	4.0	3.3	3.2	3.3	2.5	3.3	4.2	5.2	6.1	6.7	6.9	7.2	7.4	7.6	7.5	7.4	6.5	5.3	4.0	3.9	4.2	3.7	3.7	5.0
Wichita, Kans.	7.0	6.9	6.6	6.4	6.4	6.4	6.3	6.5	7.1	8.1	9.4	9.7	10.4	10.5	10.3	10.7	10.5	9.7	8.9	7.7	6.8	7.2	7.5	7.3	8.1
Williston, N. Dak.	6.0	6.1	6.2	6.2	5.5	5.8	5.6	5.5	5.8	7.9	9.5	10.3	11.5	11.6	11.7	11.7	12.4	11.8	11.7	11.0	9.0	7.3	6.9	6.5	8.5
Wilmington, N. C.	5.5	4.9	5.1	5.0	5.0	5.6	5.3	6.9	7.5	7.6	7.2	7.2	7.9	9.4	10.1	10.4	9.7	8.6	6.8	5.8	5.7	5.4	5.7	5.7	6.8
Winnemucca, Nev.	6.9	7.0	7.3	7.3	7.3	7.2	6.9	6.3	6.0	5.4	5.7	6.9	7.5	8.4	10.1	10.5	11.8	12.1	10.9	9.9	9.5	8.7	6.7	6.8	8.0
Woods Hole, Mass.	8.6	9.4	8.5	8.8	8.9	9.1	9.1	9.5	9.6	8.9	8.7	9.8	10.1	11.4	11.9	12.6	12.0	12.2	11.1	9.1	8.7	9.2	8.2	8.8	9.8
Yuma, Ariz.	5.2	4.6	4.6	5.0	5.0	4.5	3.9	3.8	4.1	4.3	5.9	5.8	7.4	7.0	7.2	8.0	7.6	8.9	8.9	9.3	10.5	8.7	8.0	6.5	6.4

TABLE VIII.—*Heights of rivers above low-water mark, August, 1896.*

Stations.	Distance to mouth of river.	Danger-point on gauge.	Highest water.		Lowest water.		Me'n stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Mississippi River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
St. Paul, Minn.	2,057	14.0	2.6	14,15	1.7	5,6	2.1	0.9
La Crosse, Wis.	1,867	10.0	2.5	17,18	1.4	30,31	2.1	1.1
Dubuque, Iowa.	1,759	15.0	2.7	24	1.2	31	2.0	1.5
Davenport, Iowa.	1,659	15.0	3.2	1	1.5	31	2.1	1.7
Keokuk, Iowa.	1,525	14.0	6.0	1,3	1.9	31	3.6	4.1
Hannibal, Mo.	1,462	17.0	8.3	4	2.8	31	5.0	5.5
St. Louis, Mo.	1,321	30.0	15.8	6	9.5	31	13.0	6.3
Memphis, Tenn.	910	33.0	23.9	2	8.7	31	16.2	15.2
Helena, Ark.	834	37.0	31.5	1	14.1	31	24.0	17.4
Arkansas City, Ark.	702	42.0	32.9	1,2	14.2	31	25.5	18.7
Greenville, Miss.	662	40.0	28.0	2	12.0	31	21.7	16.0
Vicksburg, Miss.	541	41.0	30.1	5	12.6	31	24.5	17.5
New Orleans, La.	108	13.0	9.1	16	5.2	30	7.7	3.9
Missouri River.								
Pierre, S. Dak.*	1,132	13.0	5.6	1	2.8	29	3.9	2.8
Sioux City, Iowa.	802	18.7	10.4	1	5.8	31	7.8	4.6
Omaha, Nebr.	667	18.0	11.0	1	8.1	31	9.5	2.9
Kansas City, Mo.	386	21.0	13.6	4	10.2	31	11.7	3.4
Ohio River.								
Parkersburg, W. Va.	786	38.0	27.2	1	4.5	31	9.7	22.7
Catlettsburg, Ky.	652	50.0	36.4	2	5.0	31	14.5	31.4
Cincinnati, Ohio.	500	45.0	41.8	2	10.0	31	20.1	31.8
Louisville, Ky.	368	24.0	15.1	3	5.8	26	8.8	9.3
Evansville, Ind.	184	30.0	30.5	6	7.3	29	17.3	23.2
Paducah, Ky.	47	40.0	24.5	2	6.3	29,30	15.0	18.2
Cairo, Ill.	1,140†	40.0	31.5	2	13.5	31	22.8	18.0
Monongahela River.								
Pittsburg, Pa.	966‡	22.0	16.4	1	2.5	18	5.8	13.9
Great Kanawha River.								
Charleston, W. Va.	— 61	30.0	8.3	2	4.2	22	5.3	4.1

Stations.	Distance to mouth of river.	Danger-point on gauge.	Highest water.		Lowest water.		Me'n stage.	Monthly range.
			Height.	Date.	Height.	Date.		
Big Sandy River.	*Miles.*	*Feet.*	*Feet.*		*Feet.*		*Feet.*	*Feet.*
Louisa, Ky.	26	.....	17.2	25	3.8	22	8.0	13.4
Wabash River.								
Mount Carmel, Ill.	50	15.0	14.1	1	5.5	25	9.5	8.6
Cumberland River.								
Burnside, Ky.	404	50.0	4.5	2	1.1	31	2.4	3.4
Nashville, Tenn.	145	40.0	12.5	1	1.8	25,28,29,31	3.8	10.7
Tennessee River.								
Knoxville, Tenn.	640	29.0	.....	.....	.....	.....	.....	.....
Chattanooga, Tenn.	455	33.0	5.5	1	2.2	23,24	3.5	3.3
Johnsonville, Tenn.	94	21.0	9.8	1	1.6	29-31	3.4	8.2
Arkansas River.								
Fort Smith, Ark.	351	22.0	5.3	1	1.6	25	2.8	3.7
Little Rock, Ark.	176	23.0	9.0	1	3.5	29	4.8	5.5
Red River.								
Shreveport, La.	449	29.2	1.0	3	— 2.6	29-31	—1.3	3.6
James River.								
Lynchburg, Va.	251	18.0	2.5	1	0.3	31	1.0	2.2
Congaree River.								
Columbia, S. C.	.....	15.0	2.4	4	0.7	25	1.4	1.7
Savannah River.								
Augusta, Ga.	140	32.6	7.0	3	3.9	25	5.4	3.1
Alabama River.								
Montgomery, Ala.	215	48.0	1.6	3	— 0.5	24	0.3	2.1
Willamette River.								
Portland, Oreg.	.....	15.0	12.2	1	4.5	30,31	7.7	7.7
Sacramento River.								
Redbluff, Cal.	.....	20.0	0.7	1-3	0.3	28-30	0.5	0.4
Sacramento, Cal.	.....	28.0	11.5	1	9.2	31	10.4	2.3

*Beginning with July 7, 1896, all readings made from the Fort Pierre gauge. †To mouth of Mississippi River. ‡To mouth of Ohio River.

TABLE IX.—*Resultant winds from observations at 8 a. m. and 8 p. m., daily, during August, 1896.*

Stations.	Component direction from—				Resultant.	
	N.	S.	E.	W.	Direction from—	Duration.
New England.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
Eastport, Me	13	30	11	21	s. 30 w.	20
Portland, Me	16	28	9	20	s. 43 w.	16
Northfield, Vt	12	44	6	5	s. 2 e.	32
Boston, Mass	14	25	14	22	s. 42 w.	12
Nantucket, Mass	17	24	13	22	s. 52 w.	11
Woods Hole, Mass.*	5	14	13	8	s. 29 e.	10
Block Island, R. I	11	19	14	34	s. 68 w.	22
New Haven, Conn	23	19	10	21	n. 70 w.	12
Middle Atlantic States.						
Albany, N. Y	14	29	11	15	s. 15 w.	16
New York, N. Y	18	24	12	24	s. 63 w.	13
Harrisburg, Pa	17	15	14	25	n. 80 w.	11
Philadelphia, Pa	23	19	11	21	n. 68 w.	11
Baltimore, Md	24	16	11	25	n. 60 w.	16
Washington, D. C	28	17	9	18	n. 39 w.	14
Lynchburg, Va	29	12	19	18	n. 3 e.	17
Norfolk, Va	18	23	23	16	s. 54 e.	9
South Atlantic States.						
Charlotte, N. C	13	26	29	7	s. 60 e.	26
Hatteras, N. C	21	18	17	23	n. 63 w.	7
Kittyhawk, N. C	18	30	23	21	s. 45 e.	3
Raleigh, N. C	19	26	13	18	s. 36 w.	9
Wilmington, N. C	14	27	15	23	s. 32 w.	15
Charleston, S. C	12	29	19	19	s.	17
Augusta, Ga	18	24	25	13	s. 63 e.	13
Savannah, Ga	16	31	14	12	s. 8 e.	15
Jacksonville, Fla	10	27	24	13	s. 33 e.	20
Florida Peninsula.						
Jupiter, Fla	11	23	24	12	s. 45 e.	17
Key West, Fla	8	16	45	2	s. 80 e.	44
Tampa, Fla	17	17	30	14	e.	16
Eastern Gulf States.						
Atlanta, Ga	19	16	23	19	n. 53 e.	5
Pensacola, Fla	25	18	13	24	n. 58 w.	13
Mobile, Ala	21	21	10	23	w.	13
Montgomery, Ala	16	18	20	20	s.	2
Meridian, Miss	14	29	12	20	s. 28 w.	17
Vicksburg, Miss	18	25	17	17	s.	7
New Orleans, La	17	23	17	22	s. 40 w.	8
Western Gulf States.						
Shreveport, La	12	34	18	13	s. 13 e.	23
Fort Smith, Ark	17	13	37	5	n. 83 e.	32
Little Rock, Ark	14	31	16	18	s. 7 w.	17
Corpus Christi, Tex	5	31	30	12	s. 35 e.	32
Galveston, Tex	9	36	14	18	s. 8 w.	27
Palestine, Tex	11	39	12	10	s. 4 e.	28
San Antonio, Tex	10	32	31	3	s. 52 e.	36
Ohio Valley and Tennessee.						
Chattanooga, Tenn	27	17	15	20	n. 27 w.	11
Knoxville, Tenn	27	5	16	23	n. 18 w.	23
Memphis, Tenn	25	23	15	9	n. 72 e.	6
Nashville, Tenn	29	18	9	19	n. 42 w.	15
Lexington, Ky	19	27	18	10	s. 45 e.	11
Louisville, Ky	26	20	12	13	n. 9 w.	6
Indianapolis, Ind	22	23	11	18	s. 82 w.	7
Cincinnati, Ohio	19	23	20	11	s. 66 e.	10
Columbus, Ohio	19	24	18	15	s. 31 e.	6
Pittsburg, Pa	20	17	10	29	n. 81 w.	19
Parkersburg, W. Va	18	29	12	15	s. 15 w.	11
Lower Lake Region.						
Buffalo, N. Y	13	25	5	36	s. 69 w.	33
Oswego, N. Y	10	29	6	29	s. 50 w.	30
Rochester, N. Y	10	25	2	42	s. 69 w.	43
Erie, Pa	16	36	11	24	s. 52 w.	16
Cleveland, Ohio	15	28	21	15	s. 25 e.	14
Sandusky, Ohio	16	18	19	24	s. 68 w.	5
Toledo, Ohio	15	23	13	26	s. 58 w.	15
Detroit, Mich	20	22	11	24	s. 81 w.	13
Upper Lake Region.						
Alpena, Mich	17	21	13	28	s. 75 w.	16
Grand Haven, Mich	22	20	11	24	n. 81 w.	13
Marquette, Mich	25	17	13	29	n. 51 w.	13
Port Huron, Mich	18	29	13	15	s. 10 w.	11
Sault Ste. Marie, Mich	21	16	17	23	n. 50 w.	8
Chicago, Ill	17	21	11	21	s. 68 w.	11

Stations.	Component direction from—				Resultant.	
	N.	S.	E.	W.	Direction from—	Duration.
Upper Lake Region—Cont'd.	*Hours.*	*Hours.*	*Hours.*	*Hours.*	°	*Hours.*
Milwaukee, Wis	18	23	11	25	s. 70 w.	15
Greenbay, Wis	13	28	13	20	s. 25 w.	17
Duluth, Minn	26	16	12	30	n. 61 w.	21
North Dakota.						
Moorhead, Minn	28	21	2	19	n. 68 w.	18
Bismarck, N. Dak	28	14	18	10	n. 30 e.	16
Williston, N. Dak	24	12	15	23	n. 34 w.	14
Upper Mississippi Valley.						
St. Paul, Minn	16	26	12	25	s. 52 w.	16
La Crosse, Wis.†	5	21	2	5	s. 11 w.	16
Davenport, Iowa	16	20	12	26	s. 74 w.	15
Des Moines, Iowa	22	24	8	14	s. 72 w.	6
Dubuque, Iowa	26	19	5	22	n. 68 w.	18
Keokuk, Iowa	19	27	13	18	s. 32 w.	9
Cairo, Ill	25	26	11	8	s. 72 e.	3
Springfield, Ill	18	27	15	16	s. 6 w.	9
Hannibal, Mo	16	28	17	19	s. 9 w.	12
St. Louis, Mo	18	31	11	11	s.	13
Missouri Valley.						
Columbia, Mo.*	7	15	11	4	s. 41 e.	11
Kansas City, Mo	14	33	20	10	s. 28 e.	22
Springfield, Mo	15	30	26	5	s. 55 e.	26
Omaha, Nebr	18	23	22	14	s. 58 e.	9
Sioux City, Iowa†	11	14	8	2	s. 63 e.	7
Pierre, S. Dak	20	32	29	8	s. 60 e.	24
Huron, S. Dak	21	19	25	15	n. 79 e.	10
Northern Slope.						
Havre, Mont	25	11	11	30	n. 54 w.	24
Miles City, Mont	27	11	15	24	n. 29 w.	18
Helena, Mont	16	21	6	28	s. 77 w.	23
Rapid City, S. Dak	20	13	17	23	n. 41 w.	9
Cheyenne, Wyo	16	18	7	30	s. 85 w.	23
Lander, Wyo	13	24	11	29	s. 59 w.	21
North Platte, Nebr	11	26	21	15	s. 22 e.	16
Middle Slope.						
Denver, Colo	13	34	14	14	s.	21
Pueblo, Colo	27	15	16	18	n. 9 w.	12
Concordia, Kans	14	27	23	5	s. 54 e.	22
Dodge City, Kans	14	31	27	2	s. 56 e	30
Wichita, Kans	10	34	23	2	s. 41 e.	32
Oklahoma, Okla	7	44	15	5	s. 15 e.	38
Southern Slope.						
Abilene, Tex	6	43	22	9	s. 19 e.	39
Amarillo, Tex	7	50	2	4	s. 3 w.	43
Southern Plateau.						
El Paso, Tex	14	15	29	20	s. 84 e.	9
Santa Fe, N. Mex	5	35	26	16	s. 18 e.	32
Phœnix, Ariz	3	26	7	33	s. 48 w.	35
Yuma, Ariz	12	25	15	22	s. 28 w.	15
Middle Plateau.						
Carson City, Nev	9	20	6	37	s. 70 w.	33
Winnemucca, Nev	8	22	13	31	s. 52 w.	23
Salt Lake City, Utah	13	27	26	12	s. 45 e.	20
Northern Plateau.						
Baker City, Oreg	21	31	5	19	s. 54 w.	17
Idaho Falls, Idaho	18	32	8	16	s. 30 w.	16
Spokane, Wash	22	19	15	20	n. 59 w.	6
Walla Walla, Wash	8	37	7	18	s. 21 w.	31
North Pacific Coast Region.						
Fort Canby, Wash	24	24	12	15	w.	3
Port Angeles, Wash.*	5	0	9	20	n. 66 w.	12
Seattle, Wash	17	27	7	19	s. 50 w.	16
Tatoosh Island, Wash	10	18	16	35	s. 48 w.	12
Portland, Oreg	31	15	7	29	n. 54 w.	27
Roseburg, Oreg	38	5	8	24	s. 26 w.	37
Middle Pacific Coast Region.						
Eureka, Cal	30	14	6	28	n. 54 w.	27
Redbluff, Cal	15	27	25	18	s. 30 e.	14
Sacramento, Cal	3	42	9	26	s. 24 w.	42
San Francisco, Cal	0	16	0	55	s. 74 w.	58
South Pacific Coast Region.						
Fresno, Cal	37	0	2	44	n. 49 w.	56
Los Angeles, Cal	11	12	16	35	s. 87 w.	19
San Diego, Cal	24	14	5	37	n 73 w.	34
San Luis Obispo, Cal	29	10	3	28	n. 53 w.	31

*From observations at 8 p. m. only. †From observations at 8 a. m. only.

TABLE X.—*Thunderstorms and auroras, August, 1896.*

States.	No. of stations.		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total. No.	Total. Days.	
Alabama	53	T.	4	1	1	3	4	2	....	8	2	..	1	3	3	7	2	4	3	3	....	....	....	1	5	2	1	1	....	1	....	....	....	62	24	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Arizona	48	T.	2	2	3	3	....	1	1	....	....	1	....	2	....	3	2	4	1	3	6	4	....	2	2	3	....	4	3	2	1	....	....	55	22	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Arkansas	51	T.	4	3	5	....	....	1	....	2	7	6	2	....	6	5	....	3	4	7	3	3	1	3	2	....	1	4	....	....	....	....	....	72	20	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
California	197	T.	....	....	1	....	....	....	....	....	....	1	....	....	....	2	3	3	4	3	11	5	3	19	3	1	....	1	3	6	14	11	....	94	18	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Colorado	70	T.	1	1	3	2	5	2	....	....	....	....	2	3	1	1	2	11	9	10	8	10	8	3	2	2	2	2	4	4	....	8	4	110	26	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Connecticut	22	T.	....	1	....	....	1	2	10	..	8	1	1	....	2	8	....	5	....	1	2	....	....	....	7	....	....	....	1	....	....	....	....	50	14	T.
		A.	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....	....	....	....	....	....	....	....	2	....	....	4	3	A.
Delaware	6	T.	....	....	....	....	....	....	1	....	....	....	1	1	2	2	....	2	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	11	8	T.
		A.	....	....	....	....	....	1	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	1	1	A.
Dist. of Columbia	4	T.	....	....	....	....	....	....	....	....	....	1	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	3	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Florida	38	T.	7	1	3	12	6	9	7	5	3	3	4	3	5	7	4	8	5	5	6	8	7	7	6	5	9	11	11	10	6	2	3	188	31	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Georgia	49	T.	4	3	2	3	....	....	2	2	3	5	7	2	6	7	2	3	2	3	....	....	....	....	....	3	1	2	....	....	....	....	....	62	19	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Idaho	36	T.	....	....	4	....	2	....	....	1	....	....	....	....	....	....	1	3	....	1	....	5	1	....	....	1	1	1	2	3	5	7	4	42	16	T.
		A.	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	2	A.
Illinois	97	T.	14	....	2	....	8	11	9	1	8	8	13	13	8	6	20	13	1	1	....	...	12	30	2	....	....	....	....	....	....	....	....	180	19	T.
		A.	3	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	2	A.
Indiana	48	T.	7	....	....	....	....	11	10	1	1	4	3	6	2	2	6	5	....	....	....	1	4	14	4	....	....	1	....	....	....	....	....	82	17	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Indian Territory	6	T.	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Iowa	101	T.	3	....	5	1	14	3	7	10	18	10	10	8	13	22	29	4	1	....	....	1	15	5	1	....	2	....	....	....	3	....	....	185	22	T.
		A.	5	1	....	....	....	6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	3	A.
Kansas	73	T.	....	....	....	1	6	2	....	2	1	2	3	5	....	1	2	2	8	6	3	....	....	8	....	....	7	....	....	1	3	....	6	69	19	T.
		A.	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	2	2	A.
Kentucky	47	T.	9	1	....	....	....	....	3	3	1	....	....	8	2	1	5	1	....	....	....	....	5	6	7	1	....	1	....	....	....	....	....	54	15	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Louisiana	48	T.	8	7	3	....	1	5	10	5	12	6	9	4	9	6	7	3	4	9	7	2	3	3	9	6	7	6	4	1	....	2	....	158	28	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Maine	16	T.	....	....	....	4	....	....	1	....	5	1	....	2	....	1	1	1	1	4	2	....	....	....	....	....	....	1	....	....	1	....	....	23	11	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	2	2	....	....	....	....	....	....	....	....	....	....	....	7	5	A.
Maryland	31	T.	2	5	....	....	....	1	5	....	5	4	....	7	13	3	1	4	2	....	....	....	1	2	3	2	1	....	....	....	....	....	1	62	18	T.
		A.	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	1	A.
Massachusetts	77	T.	....	....	....	....	34	23	9	1	6	5	....	8	....	8	....	....	....	12	15	....	....	....	....	1	....	....	....	....	....	....	....	122	11	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	3	3	A.
Michigan	96	T.	7	1	1	24	18	17	....	23	21	23	17	5	5	9	8	....	....	1	....	1	1	12	2	....	5	9	....	5	13	1	....	229	24	T.
		A.	1	....	....	1	1	6	....	....	....	....	1	2	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14	7	A.
Minnesota	69	T.	....	1	16	7	4	4	6	18	19	15	1	1	3	7	12	....	....	....	....	2	3	1	....	3	7	....	....	2	1	....	....	133	21	T.
		A.	6	5	....	....	1	6	2	....	4	2	....	1	....	....	....	....	....	1	....	....	....	....	2	....	....	....	....	....	....	....	....	32	11	A.
Mississippi	52	T.	6	4	1	3	4	1	3	5	1	2	....	7	7	5	5	3	8	6	....	....	5	1	10	12	2	7	1	....	....	1	....	110	25	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Missouri	96	T.	6	....	....	2	8	9	5	11	8	12	16	21	19	22	20	24	11	16	9	6	4	38	4	....	....	3	....	1	3	....	2	270	25	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Montana	40	T.	4	2	5	3	1	2	1	1	....	....	....	....	....	1	1	2	3	....	1	....	1	....	....	....	....	....	1	....	....	....	2	31	16	T.
		A.	2	1	1	....	1	7	1	1	7	2	1	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	26	11	A.
Nebraska	112	T.	....	....	....	8	9	2	3	6	6	5	2	6	11	3	4	4	8	1	....	1	9	....	....	....	2	....	....	....	2	1	1	94	21	T.
		A.	....	....	....	....	....	9	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11	3	A.
Nevada	39	T.	....	1	....	....	....	....	....	....	....	....	2	....	....	1	5	7	5	4	11	6	7	6	4	3	....	1	....	3	1	1	....	68	17	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
New Hampshire	23	T.	....	1	....	5	9	6	3	....	2	6	1	1	....	1	....	2	1	2	3	....	....	....	....	....	1	....	1	....	....	....	1	46	17	T.
		A.	....	....	....	....	....	1	..	....	2	....	....	....	....	....	....	....	3	....	....	1	....	....	....	....	....	....	....	3	....	....	....	10	5	A.
New Jersey	54	T.	....	....	....	....	....	1	10	2	8	....	4	1	8	14	....	10	....	7	....	....	....	....	1	5	....	....	....	....	....	....	....	71	12	T.
		A.	....	....	....	....	....	7	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7	1	A.
New Mexico	36	T.	3	2	2	3	2	2	3	1	2	2	2	2	2	1	1	1	1	1	1	3	4	3	1	3	2	4	1	2	3	6	67	31	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
New York	93	T.	2	1	....	4	2	13	10	2	15	3	....	4	6	5	....	20	1	14	....	....	1	1	10	1	1	5	....	....	....	3	....	124	22	T.
		A.	....	....	....	1	1	4	....	....	....	1	....	....	....	....	....	....	....	....	2	....	....	....	....	....	1	....	....	....	....	....	....	10	6	A.
North Carolina	60	T.	9	9	8	....	....	....	1	10	6	22	17	16	14	25	19	14	6	8	1	1	2	8	2	19	2	....	....	2	....	....	....	221	23	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
North Dakota	39	T.	....	6	2	5	....	6	5	3	4	1	....	....	1	1	....	....	....	....	1	1	2	....	....	....	....	....	....	....	....	1	....	39	14	T.
		A.	3	2	2	1	....	5	2	1	8	2	2	1	2	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	33	14	A.
Ohio	140	T.	15	....	....	....	....	35	9	18	9	39	18	19	12	5	13	8	....	....	....	1	9	42	21	....	....	10	1	....	....	....	....	284	18	T.
		A.	2	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	4	3	A.
Oklahoma	20	T.	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	4	4	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Oregon	60	T.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	1	....	....	....	....	....	1	4	2	9	4	2	25	9	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Pennsylvania	93	T.	5	3	..	....	....	1	12	....	24	6	3	12	8	3	....	7	1	4	1	1	....	4	7	1	....	....	....	....	....	....	....	103	18	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	1	A.
Rhode Island	6	T.	....	....	....	....	2	....	4	....	....	....	....	1	....	2	....	....	....	2	3	....	....	....	....	....	....	....	....	....	....	....	....	14	6	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
South Carolina	42	T.	7	1	9	5	..	....	2	2	3	4	12	2	8	14	2	8	2	8	....	....	....	....	....	10	1	5	5	....	....	....	....	110	20	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
South Dakota	46	T.	....	1	2	2	....	1	7	1	2	1	....	....	8	7	4	1	....	1	1	9	2	....	....	....	....	....	....	....	....	....	....	50	16	T.
		A.	2	....	....	....	1	1	....	2	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	9	6	A.
Tennessee	49	T.	5	5	2	3	....	....	3	4	6	1	4	4	5	2	1	6	....	2	....	1	4	2	11	3	....	1	....	....	....	1	....	76	22	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Texas	91	T.	....	....	4	1	....	....	5	....	....	2	3	3	2	2	2	5	2	2	....	....	....	1	5	5	1	....	8	2	....	....	2	57	19	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Utah	32	T.	....	1	1	....	....	....	....	....	....	....	....	4	1	....	4	2	6	2	4	3	6	1	2	1	....	....	2	3	....	....	....	43	16	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Vermont	13	T.	..	....	....	....	6	6	2	1	....	1	...	....	....	1	....	5	....	2	....	....	....	....	1	....	....	....	....	....	....	....	....	25	9	T.
		A.	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	3	..	....	6	4	A.
Virginia	37	T.	6	4	3	....	..	1	4	1	....	9	4	3	10	5	5	4	....	....	....	....	1	1	7	1	....	....	....	....	....	....	....	69	17	T.
		A.	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	A.
Washington	51	T.	2	1	....	1	2	....	....	....	....	....	....	....	....	1	1	2	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	18	8	T.
		A.	....	....	....	....	....	3	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	2	A.
West Virginia	37	T.	7	2	2	....	....	1	3	1	1	4	2	5	4	....	1	1	....	....	....	....	3	5	6	1	....	....	....	....	....	....	....	49	17	T.
		A.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	0	0	A.
Wisconsin	58	T.	2	....	14	13	22	3	3	22	22	14	18	1	....	5	12	....	....	1	1	.	....	4	3	....	....	9	....	....	5	....	....	172	17	T.
		A.	4	4	1	1	....	11	2	1	....	1	....	....	....	....	....	....	1	1	....	....	....	....	1	....	....	....	....	....	....	....	....	28	11	A.
Wyoming	11	T.	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	1	....	....	....	1	....	....	....	....	....	....	....	....	2	....	6	5	T.
		A.	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	2	A.
Sums	2,713	T.	151	72	104	118	170	184	179	173	239	230	183	194	208	235	208	216	101	151	100	74	128	224	150	94	66	79	58	49	68	47	35	4,228	....	T.
		A.	30	13	4	4	5	73	8	6	25	9	4	4	3	1	1	0	14	4	4	4	1	1	0	4	2	1	1	0	10	0	1	237	....	A.

TABLE XI.—*Hourly sunshine as deduced from sunshine recorders, August, 1896.*

Stations.	Instrument.	Percentages for each hour of local mean time ending with the respective hour.																Monthly summary.			
		A. M.								P. M.								Instrumental record.			Personal estimate.
		5	6	7	8	9	10	11	Noon	1	2	3	4	5	6	7	8	Actual.	Possible.	Per cent of possible.	
																		Hours.	*Hours.*		
Atlanta, Ga.*	T.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baltimore, Md	T.	.....	63	56	58	69	72	76	76	79	71	68	68	58	34	37	73	268.8	425.2	64	60
Bismarck, N. Dak	P.	50	53	65	79	85	82	84	86	82	81	81	85	81	63	53	68	332.2	440.0	75	65
Boston, Mass	T.	33	56	63	61	61	67	77	76	75	65	59	52	50	62	39	15	261.8	429.4	61	54
Buffalo, N. Y.	T.	0	15	27	56	75	90	91	95	91	83	88	84	72	62	54	47	304.1	431.3	71	38
Chicago, Ill	T.	33	52	66	86	91	92	94	96	93	93	96	95	90	62	46	35	354.0	429.4	82	69
Cincinnati, Ohio	T.	.....	67	66	70	85	88	91	89	91	88	92	92	87	78	68	73	350.0	423.2	83	64
Cleveland, Ohio	P.	50	50	38	45	62	70	68	72	75	74	76	77	76	64	53	62	276.4	429.4	64	53
Columbus, Ohio	T.	.....	20	20	44	69	75	75	75	79	71	75	66	54	21	15	43	234.0	425.2	55	45
Denver, Colo	P.	.....	54	60	74	79	84	91	81	70	59	63	48	47	34	28	50	267.0	425.2	63	56
Des Moines, Iowa	T.	67	62	53	55	54	64	68	70	70	76	73	65	56	55	55	69	296.1	429.4	69	55
Detroit, Mich	T.	50	34	40	61	72	75	80	78	84	86	87	82	69	51	41	50	290.5	429.4	68	53
Dodge City, Kans	P.	.....	53	69	85	87	89	91	86	84	91	92	84	77	57	26	71	327.3	422.1	78	70
Dubuque, Iowa*	T.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eastport, Me	P.	32	31	40	44	46	49	59	65	65	67	62	60	64	46	34	43	228.0	435.6	52	39
Eureka, Cal	P.	0	0	4	7	12	17	27	36	48	51	45	40	41	37	16	0	117.1	427.4	27	36
Fresno, Cal	T.	.....	80	77	80	87	90	96	98	92	91	92	88	85	82	84	100	366.2	420.1	87	83
Galveston, Tex	P.	.....	12	69	85	84	81	83	88	82	86	87	92	89	78	62	.....	325.8	408.0	80	72
Helena, Mont	P.	56	68	67	70	73	77	75	75	71	71	75	71	68	66	68	67	311.4	440.0	71	64
Kansas City, Mo	P.	.....	48	60	65	72	77	79	79	73	81	82	80	72	68	68	82	306.0	423.2	72	68
Little Rock, Ark	T.	.....	77	76	80	86	90	94	92	94	94	94	92	85	65	54	0	352.1	417.1	84	63
Louisville, Ky	T.	.....	71	71	77	85	91	89	98	94	97	94	94	83	74	72	71	338.3	422.1	85	73
Minneapolis, Minn	T.	42	33	45	62	74	82	92	95	89	88	84	75	73	55	45	59	308.3	435.6	71	.....
New Orleans, La	T.	.....	15	40	82	83	85	84	83	83	70	66	64	52	34	5	.....	259.1	409.7	63	62
New York, N. Y	T.	0	19	32	54	61	67	72	75	74	81	78	62	62	48	35	40	251.3	427.4	59	61
Northfield, Vt	P.	53	42	48	66	72	69	72	66	65	65	64	64	60	50	38	41	261.0	433.6	60	45
Omaha	P.	64	36	48	54	59	62	65	65	69	80	83	71	65	57	53	80	266.8	427.4	62	52
Philadelphia, Pa	T.	60	67	71	79	86	90	94	94	93	94	90	85	79	71	53	71	349.6	425.2	82	55
Phœnix, Ariz	P.	.....	66	78	85	88	91	90	87	93	89	89	87	88	80	77	.....	353.9	414.0	85	60
Portland, Me	T.	13	16	41	54	67	69	74	78	83	77	77	76	69	53	28	5	266.5	433.6	61	42
Portland, Oreg	T.	8	25	26	26	28	34	39	50	48	52	53	55	56	55	59	48	188.4	437.6	43	54
Do	P.	8	22	27	29	32	37	40	44	47	53	53	57	56	58	59	48	192.6	437.6	44	54
Rochester, N. Y	T.	11	29	37	57	70	74	75	74	79	81	73	67	60	46	39	41	266.3	431.3	62	57
St. Louis, Mo	T.	.....	58	64	79	85	87	92	94	95	92	89	87	80	69	62	73	344.8	423.2	81	69
Salt Lake City, Utah	P.	80	64	73	81	80	84	80	86	79	75	78	85	73	69	64	70	328.1	427.4	77	54
San Diego, Cal	P.	...	11	16	38	48	76	90	99	92	93	92	90	85	82	68	.....	292.2	414.0	71	82
San Francisco, Cal	T.	...	4	9	20	40	62	88	97	100	98	96	92	83	64	43	71	276.2	422.1	65	55
Santa Fe, N. Mex	P.	.....	67	71	77	82	87	89	76	74	73	64	71	65	49	35	50	295.6	418.7	71	52
Savannah, Ga	P.	.....	56	65	75	76	79	80	71	67	76	72	71	60	50	29	.....	278.0	412.6	67	61
Vicksburg, Miss	T.	.....	56	58	72	90	94	96	97	95	92	88	74	59	48	27	.....	315.2	412.6	76	70
Washington, D. C	P.	.....	68	72	75	78	81	84	80	75	78	77	72	64	63	61	55	311.7	423.2	74	69
Wilmington, N. C	T.	.....	28	37	72	80	89	90	91	85	77	74	71	63	53	37	.....	288.0	415.8	69	57

* Record incomplete.

TABLE XII.—*Maximum rainfall in one hour or less, August, 1896.*

Stations.	Maximum rainfall in—						Stations.	Maximum rainfall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.		5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*			*Inch.*		*Inch.*		*Inch.*	
Atlanta, Ga	0.40	4	0.50	4	0.74	4	Milwaukee, Wis	0.06	8	0.11	8	0.38	11
Baltimore, Md	.....	.....	.....	.....	.....	.....	Nantucket, Mass	0.03	17	0.05	17	0.16	17
Bismarck, N. Dak	0.18	19	0.26	19	0.36	19	Nashville, Tenn	0.35	2	0.43	2	0.51	2
Boston, Mass	0.15	5	0.19	5	0.35	5	New Orleans, La	0.38	25	0.61	25	0.79	25
Buffalo, N. Y	0.23	26	0.30	26	0.60	26	New York, N. Y	0.19	7	0.32	14	0.59	7
Chicago, Ill	0.34	11	0.54	6	1.17	6	Norfolk, Va	0.30	2	0.50	2	0.77	2
Cincinnati, Ohio	0.26	1	0.41	1	0.90	1	Omaha, Nebr	0.45	15	0.85	15	1.07	15
Cleveland, Ohio	0.32	16	0.45	16	0.69	2	Philadelphia, Pa	0.02	22	0.04	22	0.14	22
Denver, Colo	0.03	22	0.05	22	0.25	22	Pittsburg, Pa	0.35	13	0.60	13	1.70	13
Detroit, Mich	0.50	15	0.55	15	0.85	9	Portland, Me	0.05	2	0.08	2	0.23	2
Dodge City, Kans	0.25	5	0.39	5	0.48	5	Portland, Oreg	0.06	1	0.09	1	0.23	1
Duluth, Minn	0.23	8	0.30	8	0.48	8	Rochester, N. Y	0.18	6	0.34	6	0.64	6
Eastport, Me	0.03	23	0.05	23	0.17	23	St. Louis, Mo	0.16	16	0.25	16	0.66	16
Galveston, Tex	0.06	3	0.08	3	0.11	3	St. Paul, Minn	0.60	4	0.85	4	1.58	4
Indianapolis, Ind	0.35	22	0.65	22	0.98	22	Salt Lake City, Utah	0.05	28	0.07	28	0.10	28
Jacksonville, Fla.*	0.35	14	0.60	14	1.80	26	San Diego, Cal.†	.....	.....	.....	.....	.....	.....
Jupiter, Fla	0.34	20	0.55	20	0.82	20	San Francisco, Cal	.....	.....	0.01	30	0.03	30
Kansas City, Mo	0.10	18	0.11	18	0.28	18	Savannah, Ga	0.42	18	0.67	26	1.63	26
Key West, Fla	0.20	16	0.34	16	0.40	16	Seattle, Wash	0.01	3	0.02	3	0.10	3
Little Rock, Ark	0.10	19	0.16	19	0.37	19	Vicksburg, Miss	0.12	24	0.16	24	0.35	24
Louisville, Ky.*	0.37	1	0.44	1	0.80	12	Washington, D. C	0.45	13	0.63	13	1.60	13
Memphis, Tenn	0.05	26	0.09	26	0.25	26	Wilmington, N. C	0.40	3	0.65	3	1.12	3

* Partly estimated. † Less than 0.05 inch in one hour.

TABLE XIII.—*Excessive precipitation, by stations, for August, 1896.*

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Ins.*	*h.m.*	
Cordova				2.36	1 30	22
Do				1.20	1 00	25
Daphne		3.02	27			
Elba				1.40	0 30	14
Jasper				1.20	0 50	4
Newton				1.50	1 00	7
Union Springs				1.50	1 00	17
Arizona.						
Dudleyville				1.37	1 00	20
Farleys Camp				1.50	1 30	17
St. Helena Ranch				1.21	0 30	6
Arkansas.						
Kirby				1.00	1 00	11
Lonoke		2.62	9	2.62	1 00	9
Marvell		3.45	26	3.45	0 45	26
Mossville		3.20	19			
New Gascony		3.20	23-24			
Colorado.						
Fox				1.25	1 00	31
Connecticut.						
Hartford		2.97	14			
District of Columbia.						
Washington				1.60	1 00	13
Florida.						
Amelia		2.50	28-29			
Earnestville	10.20	4.42	6	4.42	4 00	6
Eustis				2.16	1 40	16
Gainesville				1.85	1 30	5
Jacksonville				1.21	1 00	4
Do				1.80	1 00	26
Lake Butler	11.22	2.50	7			
Lemon City		4.30	12-13			
Macclenny		3.03	26			
Manatee	14.57	8.58	21			
Mullet Key				2.30	1 00	1
Tampa		3.16	21-22			
Georgia.						
Alapaha				1.24	1 00	24
Allentown				1.25	0 10	13
Americus		3.19	15	3.19	1 30	15
Bainbridge				1.14	0 45	17
Columbus				1.15	1 00	1
Do				2.00	1 45	24
Dahlonega				1.66	1 00	9
Fort Gaines				1.20	1 00	26
Lumpkin				1.35	1 00	7
Macon	3.71	1				
Marshallville				1.86	1 00	18
Poulan				1.50	1 00	12
Do				1.10	1 00	25
Quitman				2.00	1 35	5
Savannah		2.72	18-19	1.50	1 18	19
Do		2.64	25-26	1.63	1 00	26
Illinois.						
Carlinville		2.72	12			
Carlyle		2.67	12	2.67	1 00	12
Chicago				1.17	0 37	6
Cordova				1.70	1 00	22
Dixon				1.24	1 00	13
Knoxville		3.00	15			
Laharpe		5.25	1	5.25	3 00	1
Lanark				1.44	0 45	5
Monmouth		3.35	15			
Oswego		3.20	21-22			
Philo		2.84	12			
Rose Hill		3.14	21-22	1.54	1 30	21
Tuscola		3.23	12			
Indiana.						
Angola		3.75	10	3.75	2 30	10
Bluffton		3.27	22			
Delphi				1.30	0 45	6
Farmland		3.87	7			
Do		3.32	22			
Hammond		2.86	22			
Huntington		3.31	6			
Jeffersonville		3.38	12	3.38	1 45	12
Knightstown		2.70	6-7			
Marion		2.76	22			
Richmond	10.88	4.87	7			
Do		3.14	22			
Terre Haute		2.75	15-16			
Valparaiso		2.70	6	1.10	0 35	6
Warsaw		4.45	22			
Iowa.						
Adair		3.08	*			
Afton		2.69	14			
Centerville	12.25	3.70	6			
Do		2.96	16			
Council Bluffs		3.15	14-15			
Des Moines		3.29	*			
Lenox				1.20	1 00	15
Plover		2.52	21			
St. Charles		3.20	13			
Waterloo				1.12	1 00	22
Winterset		2.90	14			
Kansas.						
Blaine		3.70	5			
Campbell		5.36	17-18			
Frankfort		2.64	18			
Grainfield				2.00	2 00	21

TABLE XIII.—*Excessive precipitation*—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Kansas—Continued.	*Inches.*	*Inches.*		*Ins.*	*h.m.*	
Horton		2.55	5-6			
Morland		3.00	21	3.00	1 00	21
Olathe		6.50	17-18			
Topeka		3.40	17-18			
Wamego				1.12	0 30	25
Kentucky.						
Eubank				1.68	1 30	7
Vanceburg				2.00	2 00	7
Louisiana.						
Emilie				1.62	0 45	2
Farmerville				1.00	0 30	23
Monroe				1.10	1 00	2
Opelousas				1.60	1 00	25
Rayne				1.30	1 05	22
Thibodeaux				1.10	1 00	8
Maine.						
Cornish				1.10	1 00	12
Maryland.						
Boettcherville				1.00	0 10	13
Laurel				1.90	1 20	13
Michigan.						
Ball Mountain		2.57	10			
Big Rapids				1.25	0 45	10
Hastings		2.60	9-10			
Highland Station		2.94	9-10			
Howell		3.60	9-10			
Iron River		3.18	4			
Kalamazoo		3.87	11-12			
Lewiston				1.95	0 30	8
Luzerne				1.15	1 00	8
Mancelona				1.20	1 00	4
Ovid		2.62	10-11			
Parkville		4.58	11	4.58	2 00	11
Pontiac		2.83	9-10			
Thornville				1.66	1 00	10
Minnesota.						
Luverne		2.95	15			
St. Paul				1.58	0 40	4
Do				1.07	0 43	9
Shakopee				1.13	1 00	8
Worthington				1.60	1 00	21
Mississippi.						
Edwards				1.00	1 30	14
Do				1.88	0 45	17
Magnolia				1.20	0 45	10
Meridian				1.75	0 30	8
Missouri.						
Bolckow		4.36	5-6			
Conception		4.80	5-6			
East Lynne		2.72	18			
Farmersville		2.75	22	2.75	0 45	22
Gallatin				2.00	0 20	22
Harrisonvile		3.43	18			
Houston		2.76	18			
Irena		3.50	5-6			
Lamar		2.50	19			
Maryville		3.93	5-6			
Mineralspring		3.80	18-19			
Oregon		3.60	5-6			
Osceola		3.20	18			
Oto				2.00	2 00	8
Pickering		3.18	5-6			
Princeton				2.01	0 25	14
Sikeston		2.80	22			
Montana.						
Boulder		2.50	8			
Nebraska.						
Beatrice		2.50	5			
Edgar		3.00	5			
Nemaha		2.52	5			
Omaha				1.67	1 00	15
Redcloud		2.50	16			
Rulo		2.75	5			
Superior		2.94	16			
Nevada.						
Fenelon				1.00	0 50	19
New Hampshire.						
Grafton				1.00	1 00	5
New Jersey.						
Ocean City				1.60	0 30	14
New Mexico.						
Gila				1.80	1 00	21
North Carolina.						
Biltmore				1.10	1 00	10
Edenton				1.68	1 00	15
Falkland		2.66	14			
Kittyhawk				1.68	1 10	18
Newbern				1.29	0 25	15
Pantego		2.81	14	1.20	1 00	18
Pittsboro				1.20	1 00	10
Skyuka				1.87	0 55	14
Wilmington				1.12	1 00	3
North Dakota.						
Langdon				1.78	1 00	20
University				1.41	1 00	7
Ohio.						
Auburn				1.10	0 30	6
Bissell				1.66	0 30	10
Fayetteville		2.79	6-7	1.27	0 55	6
Montpelier				2.34	1 20	25

TABLE XIII.—*Excessive precipitation.*—Continued.

Stations.	Monthly rainfall 10 inches, or more	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Ohio—Continued	*Inches.*	*Inches.*		*Ins.*	*h.m.*	
New Paris	.....	4.40	7	.....	.....	.....
Do	.....	2.50	22	.....	.....	.....
Sharon Center	.....	.....	.....	1.62	1 35	6
Springboro	.....	2.60	6	.....	.....	.....
Toledo	.....	.....	.....	1.40	0 54	15
Pennsylvania.						
Beaver Dam	.....	2.76	9	.....	.....	.....
Leroy	.....	.....	.....	1.02	0 45	7
Pittsburg	.....	.....	.....	1.70	1 00	13
Renovo	.....	.....	.....	1.75	0 55	12
West Newton	.....	2.86	8	.....	.....	.....
South Carolina.						
Columbia	.....	.....	.....	1.22	0 58	13
Holland	.....	3.00	28	3.00	0 15	28
Kingstree	10.14	4.10	27-28	1.78	0 40	19
Little Mountain	.....	.....	.....	2.00	1 00	11
Shaws Fork	.....	3.70	26	.....	.....	.....
Smiths Mills	.....	2.50	27	.....	.....	.....
Spartanburg	.....	.....	.....	1.10	1 00	12
South Dakota.						
Kimball	.....	.....	.....	1.25	0 15	20
Webster	.....	.....	.....	1.75	1 10	8

TABLE XIII.—*Excessive precipitation*—Continued.

Stations.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Tennessee.	*Inches.*	*Inches.*		*Ins.*	*h.m.*	
Elk Valley	.....	.....	.....	2.15	2 00	9
Tullahoma	.....	.....	.....	1.30	1 00	28
Texas.						
Coleman	.....	4.01	22-23	.....	.....	.....
Dublin	.....	4.30	22-23	.....	.....	.....
Fort Worth	.....	4.78	22-23	.....	.....	.....
Grapevine	.....	3.11	22-23	.....	.....	.....
San Antonio	.....	2.72	23-24	2.25	1 00	28
Virginia.						
Bedford City	.....	2.55	6	.....	.....	.....
Blacksburg	.....	.....	.....	1.03	0 30	11
Cape Charles	.....	3.23	24	.....	.....	.....
Gulnea	.....	2.65	13	.....	.....	.....
Nottoway	.....	3.22	10	3.22	2 00	10
Sunbeam	.....	.....	.....	1.95	1 00	15
Wisconsin.						
Shawano	.....	.....	.....	2.30	2 00	11

* July 31 to August 1.

Chart I. Tracks of Centers of Low Areas. August, 1896.

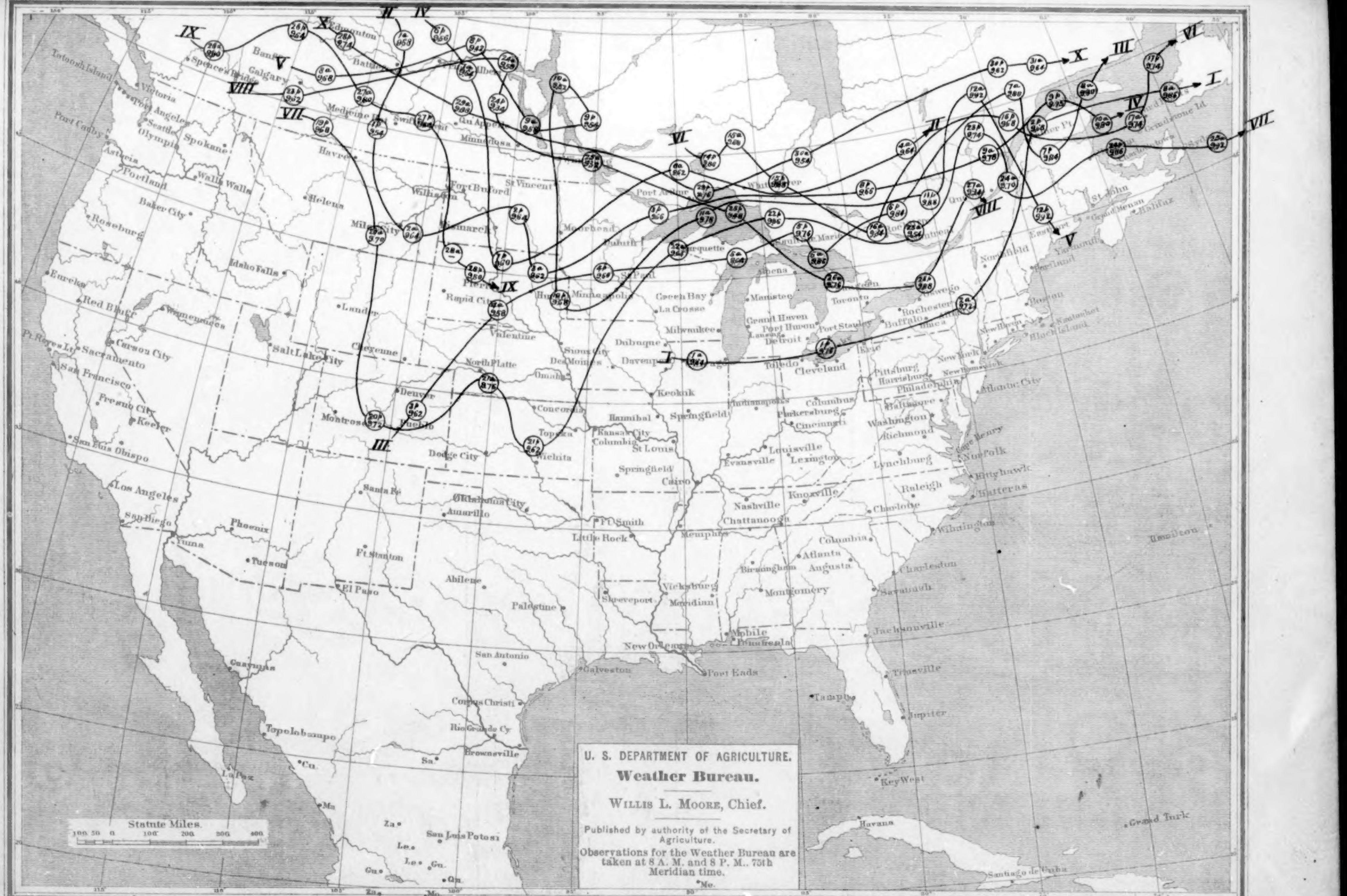

Chart II. Tracks of Centers of High Areas. August, 1896.

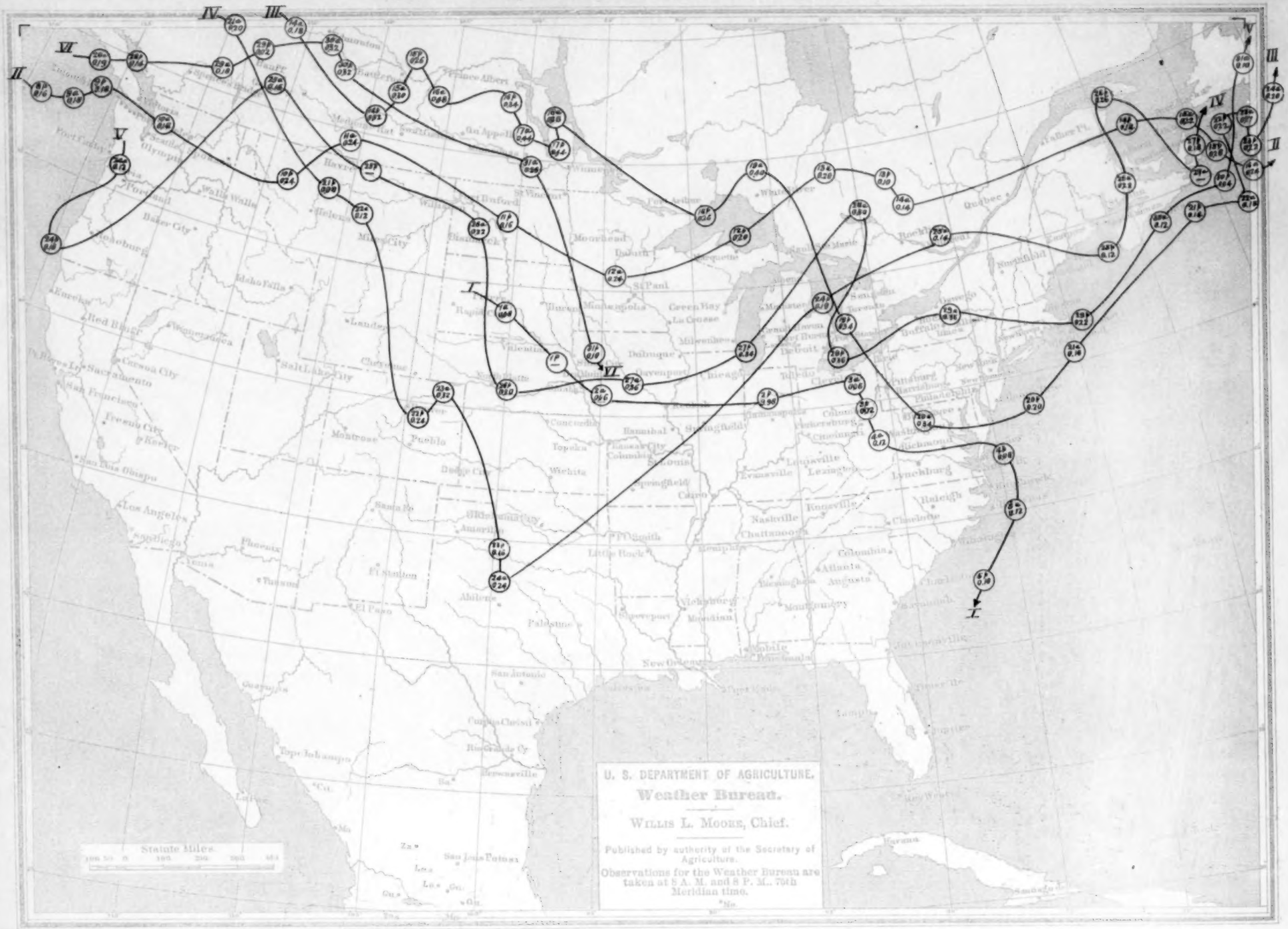
U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
WILLIS L. MOORE, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.
Statute Miles

Chart III. Total Precipitation. August, 1896.

Chart III. Total Precipitation. August, 1896.

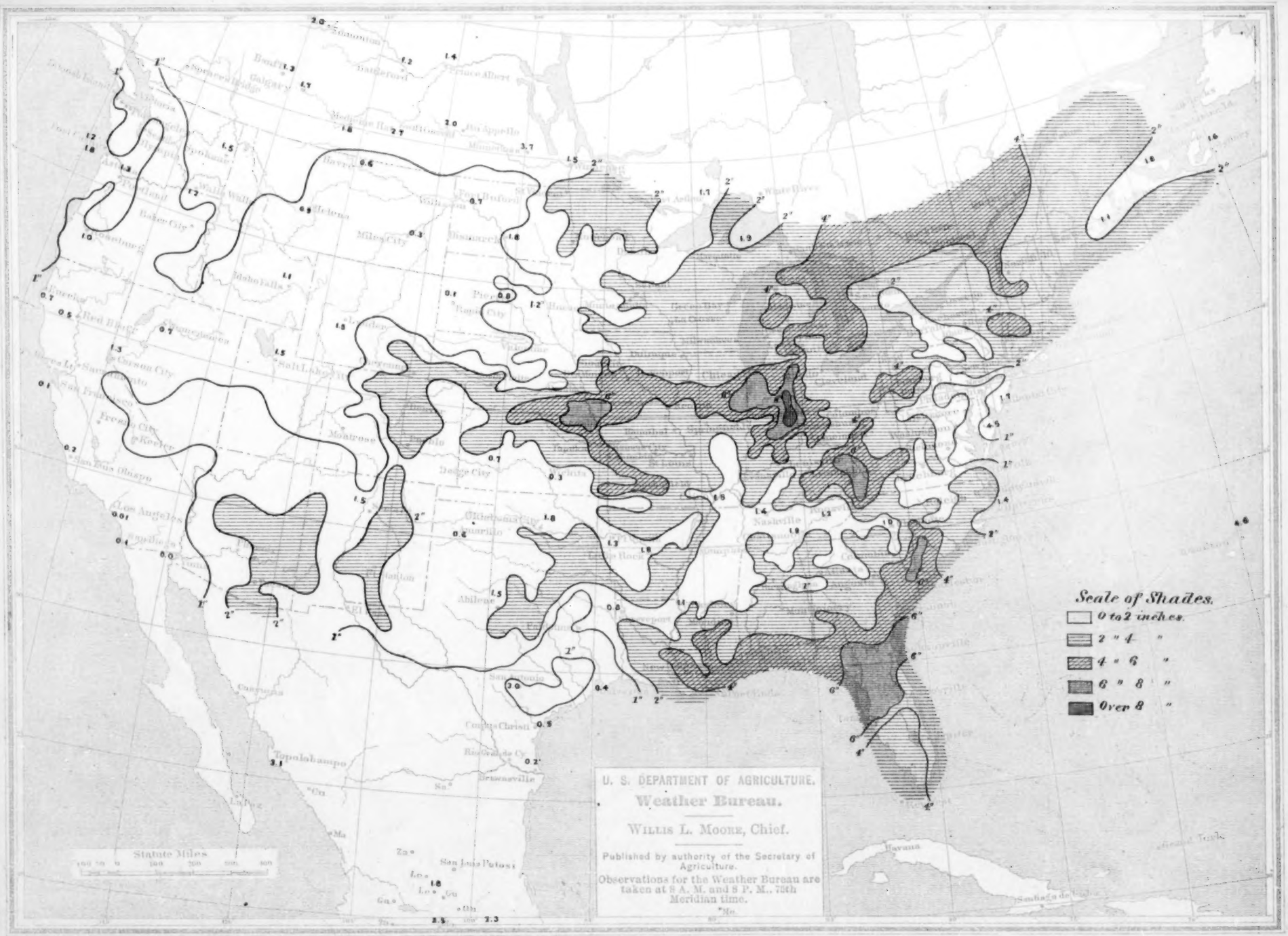
Scale of Shades.
0 to 2 inches.
2 " 4 "
4 " 6 "
6 " 8 "
Over 8 "
Statute Miles
U. S. DEPARTMENT OF AGRICULTURE.
Weather Bureau.
WILLIS L. MOORE, Chief.
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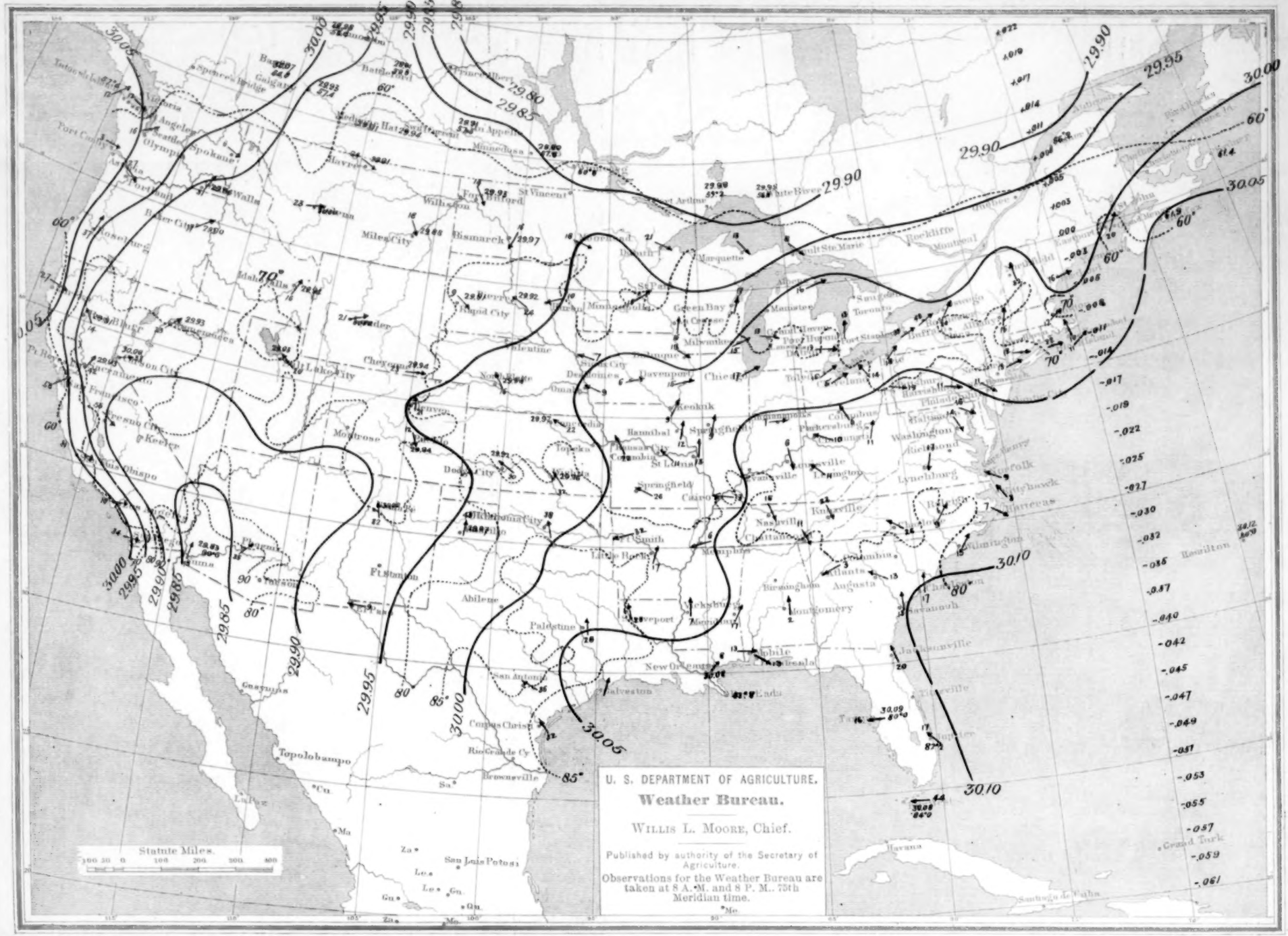
Chart IV. Isobars, Isotherms, and Resultant Winds. August, 1896.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Weather Bureau.
WILLIS L. MOORE, Chief.
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Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.
Statute Miles.
Resultant